

# **Using Video Modelling and Video Self-Modelling to Teach Money Handling Skills to Adolescents and Young Adults with Down syndrome**

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A thesis

Submitted in partial fulfilment

of the requirement for the degree

of

Master of Science

Endorsed in Child and Family Psychology

at the

University of Canterbury

by

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April, 2015

## Table of Contents

|  |            |
|--|------------|
| <b>List of Tables and Figures .....</b>  | <b>iii</b> |
| <b>Abbreviations .....</b>   | <b>v</b>   |
| <b>Acknowledgements .....</b>  | <b>vi</b>  |
| <b>Abstract.....</b>   | <b>1</b>   |
| <b>CHAPTER 1: Introduction and Literature Review .....</b>                     | <b>2</b>   |
| <b>Teaching Money Skills to Individuals with Intellectual Disability .....</b> | <b>3</b>   |
| <b>Down syndrome.....</b>  | <b>5</b>   |
| <b>Down syndrome and Numeracy.....</b>   | <b>7</b>   |
| <b>Social Learning Theory and Observational Learning.....</b>                  | <b>8</b>   |
| <b>Video Modelling and Video Self-Modelling.....</b>                           | <b>10</b>  |
| <b>Research Questions.....</b>   | <b>26</b>  |
| <b>CHAPTER 2: Method .....</b>   | <b>27</b>  |
| <b>Research Design .....</b>   | <b>27</b>  |
| <b>Ethical Consideration .....</b>   | <b>27</b>  |
| <b>Recruitment of Participants.....</b>  | <b>28</b>  |
| <b>Participants.....</b>   | <b>30</b>  |
| <b>Setting .....</b>   | <b>30</b>  |
| <b>Materials .....</b>   | <b>31</b>  |
| <b>Measures .....</b>  | <b>31</b>  |
| <b>Data Collection.....</b>  | <b>32</b>  |
| <b>Procedure.....</b>  | <b>33</b>  |
| <b>Reliability.....</b>  | <b>36</b>  |
| <b>CHAPTER 3: Results .....</b>  | <b>38</b>  |
| <b>Group Results.....</b>  | <b>38</b>  |
| <b>Individual Results .....</b>  | <b>39</b>  |
| <b>First Yoked Pair .....</b>  | <b>39</b>  |
| <b>Participant 1.....</b>  | <b>41</b>  |
| <b>Participant 2 .....</b>   | <b>41</b>  |
| <b>Second Yoked Pair .....</b>   | <b>42</b>  |
| <b>Participant 3 .....</b>   | <b>44</b>  |
| <b>Participant 4 .....</b>   | <b>44</b>  |
| <b>Third Yoked Pair .....</b>  | <b>45</b>  |
| <b>Participant 5 .....</b>   | <b>47</b>  |

|   |           |
|---|-----------|
| <b>Participant 6 .....</b>                      | <b>47</b> |
| <b>Social Validity Questionnaire .....</b>      | <b>50</b> |
| <b>Summary .....</b>                            | <b>50</b> |
| <b>CHAPTER 4: Discussion .....</b>              | <b>52</b> |
| <b>Video Modelling Intervention .....</b>       | <b>53</b> |
| <b>Video Self-Modelling Intervention .....</b>  | <b>55</b> |
| <b>The Next Dollar Strategy .....</b>           | <b>55</b> |
| <b>Limitations .....</b>                        | <b>57</b> |
| <b>Implications for Teaching .....</b>          | <b>58</b> |
| <b>Considerations for Future Research .....</b> | <b>59</b> |
| <b>Conclusion .....</b>                         | <b>60</b> |
| <b>CHAPTER 5: References .....</b>              | <b>61</b> |
| <b>APPENDIX A .....</b>                         | <b>68</b> |
| <b>APPENDIX B .....</b>                         | <b>70</b> |
| <b>APPENDIX C .....</b>                         | <b>72</b> |
| <b>APPENDIX D .....</b>                         | <b>74</b> |
| <b>APPENDIX E .....</b>                         | <b>76</b> |
| <b>APPENDIX F .....</b>                         | <b>77</b> |
| <b>APPENDIX G .....</b>                         | <b>79</b> |
| <b>APPENDIX H .....</b>                         | <b>80</b> |
| <b>APPENDIX I .....</b>                         | <b>82</b> |
| <b>APPENDIX J .....</b>                         | <b>87</b> |
| <b>APPENDIX K .....</b>                         | <b>89</b> |
| <b>APPENDIX L .....</b>                         | <b>90</b> |
| <b>APPENDIX M .....</b>                         | <b>91</b> |
| <b>APPENDIX N .....</b>                         | <b>92</b> |
| <b>APPENDIX O .....</b>                         | <b>93</b> |

## List of Tables and Figures

### Figures

|   |    |
|---|----|
| Figure 1. Number of steps performed correctly as per the 12 step task analysis undertaken for participant 1 and participant 2 (first yoked pair).....   | 40 |
| Figure 2. Number of steps performed correctly as per the 12 step task analysis undertaken for participant 3 and participant 4 (second yoked pair). .... | 43 |
| Figure 3. Number of steps performed correctly as per the 12 step task analysis undertaken for participant 5 and participant 6 (third yoked pair). ....  | 46 |

**Tables**

|  |    |
|--|----|
| Table 1 Studies used to teach purchasing skills using the Next Dollar Strategy and studies used to teach the Next Dollar Strategy.....       | 18 |
| Table 2 Demographic information of the 6 participants and their results to the money assessment task.....                                    | 30 |
| Table 3 Number of steps performed correctly (NOC) as per the 12 step Task Analysis and the error steps performed by all 6 participants ..... | 49 |

## **Abbreviations**

ASD: Autism Spectrum Disorders

CBVI: Computer Based Video Instructional

DS: Down syndrome

DVD: Digital Video Disc

FF: Feed Forward

HD: High Definition

MPEG File: Moving Picture Experts Group File

MTT: Mental Time Travel

NOC: Number of Correct Responses

PSR: Positive Self-Review

P1: Post Intervention 1

P2: Post Intervention 2

VM: Video Modelling

VSM: Video Self-Modelling

## **Acknowledgements**

I would like to thank my wonderful supervisors Dr. Gaye Tyler-Merrick and Associate Professor Karyn France for their words of wisdom, support and continuous guidance extended to me throughout the year. Thank you for constantly encouraging me and helping me foster my research skills and making my thesis journey a pleasant and unforgettable experience. A special thank you needs to be extended to Mr. Lawrence Walker for his invaluable advice given to me especially in the area of the Next Dollar Strategy.

I would also like to thank the 6 adolescents/young adults who participated in my research study. It has been an amazing experience getting to know each and every one of you and to have watched you grow throughout my study. I will truly treasure the experience for the rest of my life. You should all be very proud of your achievements. A very special thank you goes out to the parents of the 6 participants for investing your time and commitment in order to make my research study a possibility. I would also like to thank the social club the 6 participants were members of. It was an inspiring and humbling experience to have collaborated with your wonderful staff and members and for giving me the opportunity to attend a few of the meetings. A special thank you is further extended to the owner/manager of a New World supermarket and to his staff for the assistance and facilitation in order for the research to be carried out in a friendly and warm environment.

I would like to extend my utmost appreciation to my parents Chandra and Sriyani and my sister Pramitha for constantly pushing me to do my best. I would also like to thank my parent-in-laws Nihal and Chathu for all the assistance given to me throughout my years of study. A very special thank you goes out to my husband Kush for being my pillar of strength and for supporting and encouraging me throughout my study. Finally, a big thank you to all my friends and classmates for the support and making this truly an unforgettable experience.

## **Abstract**

From the beginning of civilisation, money has been considered a fundamental aspect in our day-to-day functioning. Therefore, acquiring and developing money handling skills is important for all human beings. Similarly, money skills are an integral aspect of living for individuals with intellectual disabilities such as Down syndrome. Gaining money skills for those with Down syndrome will help enable them to lead an independent life, participate in community activities and improve their quality of life. Out of the many teaching strategies adapted to teach money skills to individuals with intellectual disabilities, the Next Dollar Strategy has been found to be one of the most successful. In addition, video modelling (VM) and video self-modelling (VSM) are widely used instructional procedures which have been effective in teaching various skills to individuals with intellectual disabilities. The aim of the present study was to investigate the effects of teaching the Next Dollar Strategy to 6 adolescents/young adults with Down syndrome via VM and VSM using a non-current multiple baseline design yoked across participants and a twelve step purchasing goods procedure. The results of the study found that both VM and VSM interventions assisted in increasing the purchasing skills acquisition for all 6 participants. The VM intervention was more effective in teaching the Next Dollar Strategy compared to the VSM intervention. However, only one participant of the 6 was able to master the Next Dollar Strategy and maintain it through the follow-up and generalisation phases. From this small study, the findings suggest that teaching the Next Dollar Strategy to individuals with Down syndrome by using VM or VSM appears to be not the most effective intervention strategy.



## **CHAPTER 1: Introduction and Literature Review**

Money is considered to be one of the most integral aspects in our daily functioning as it is a means of survival and a necessity to be part of community living. As mentioned by Argyle and Furnham (2013), money is a medium of exchange and has many purposes such as, its use to purchase goods and services, to compare the value of various objects by using it as a standard or unit of account, as a standard of deferred payment, a store of value and can be promised for future transactions. People's attitudes and behaviours tend to develop around money as well. Mitchell and Mickel (1999) further add how satisfaction in most aspects of life across gender, age, culture and social setting is certainly related to one's financial standing. Therefore, developing skills essential to dealing with money is important for humans as a whole.

According to the New Zealand Ministry of Education (2013), teaching students about money skills will have a sound impact on their future lives and enable them to have a proper understanding of money and assist in making sensible financial decisions in the future. Similarly, learning money skills is just as important to individuals with disabilities considering an independent lifestyle. For people with an intellectual disability, the level of independent living, quality of life, and community adjustment is demonstrated through the acquisition of the necessary life skills (Alwell & Cobb, 2009). Some of these life skills include: personal maintenance, clothing care, transportation, communication, community utilisation, food preparation, and money management skills (Martin, Rusch, & Heal, 1982). Therefore, acquiring money skills for individuals with intellectual disabilities is considered to be a valuable life-skill as many community interactions comprise of having to pay for goods and services. Many of these individuals do not have any control over their finances as they often lack skill and opportunity and therefore lack the autonomy needed to make important decisions with regards to daily living such as, deciding on where to live, what to wear and

how to spend the one's weekend (Browder & Grasso, 1999b). Being able to manage money is also an important survival skill for young adults with intellectual disability such as Down syndrome. The inability to manage one's money has resulted in unpleasant experiences, such as uncontrolled debt and cash-flow issues for many of these individuals who have been already living in community settings. Therefore, it is vital to develop the following skills of knowing how much money an individual has, how much one can spend, knowing how to spend, how to gain access to one's money and how to save one's money (Browder & Grasso, 1999b; Martin et al., 1982).

### **Teaching Money Skills to Individuals with Intellectual Disability**

Browder and Grasso (1999) and Xin, Grasso, Dipipi-Hoy and Jitendra's (2005) literature reviews indicate there have been 46 studies specifically relating to teaching money and purchasing skills to individuals with intellectual disabilities. Around 74% of these studies employed a combination of community-based probes or instructions and special education classroom instructions (Browder & Grasso, 1999). Browder and Grasso (1999), review also found that several teaching strategies were adapted in order to teach the participants money skills with 51% of the studies focusing on teaching purchasing skills as well as money computation using the Next Dollar Strategy.

*Use of calculator.* Some of the strategies included using permanent prompts such as the use of a calculator which assisted participants to budget purchases and helped determine how much to pay for their purchases. The combined overall results of 3 of the studies (Frederick-Dugan, Test, & Varn, 1991; Matson & Long, 1986; Wheeler, Ford, Nietupski, Loomis, & Brown, 1980) indicated 11 out of 12 participants aged between 13 and 53 years with mild, moderate and severe intellectual disabilities reached criterion and were able to make purchases using a calculator.

***Use of number line.*** Another strategy used to teach money skills was the use of a number line which allowed comparison shopping by assisting participants to know which prices were lower and which prices were higher than the cost item. According to Sandknop, Schuster, Wolery and Cross (1992), all 4 participants aged between 14 and 18 years with moderate intellectual disabilities acquired the targeted behaviour of selecting lower priced items using a number line.

***Use of prompt cards.*** In one study the use of prompt cards aided 6 participants between the ages of 15 and 19 years with moderate to severe intellectual disabilities to match coins or notes, when using vending machines (Sprague & Horner, 1984).

***Pre-specified amount.*** Providing each participant a pre-specified amount of money has also been used in previous studies (Alcantara, 1994; Morse & Schuster, 2000). However, most of the strategies mentioned above might not be always feasible as there may be occasions where an individual may not have access to a calculator, number line or prompt cards. In addition, a pre-specified amount may limit the individual's options of when and how to spend their money.

***Next Dollar Strategy or the One-More-Than Technique.*** As reported by Browder and Grasso (1999), one of the most successful strategies that has been used to teach money skills to individuals with intellectual disability is the "Next Dollar Strategy" or the "One-More-Than Technique" (Cihak & Grim, 2008). This strategy teaches students to round up the price given by the salesperson to the next dollar amount. For example, if the price to be paid is \$5.60 the person will give the salesperson the next whole dollar amount, which is \$6.00. A modification of the Next Dollar Strategy is the cents pile modification in which the individual is required to leave aside 1 dollar for the cents and count on the requested dollar amount. The combination of both these piles will make up the total price amount (Cihak & Grim, 2008). The main purpose of using the Next Dollar Strategy is that it helps individuals

to avoid the issue of computing change (Browder & Grasso, 1999). Calculating how much change to offer and handling small amounts of money may often cause these students anxiety and frustration.

***Video modelling and video self- modelling.*** Various other methods have also been used to teach a variety of skills to those with intellectual disabilities. According to observational learning theory, most human behaviour is learnt via observing behaviour modelled by others (Bandura, 1997). Therefore, one of the most successful methods employed in teaching a wide range of social and functional skills to individuals with intellectual disability is video modelling and video self- modelling. Previous research indicates that procedures and interventions used to promote skill acquisition and the skills learnt through video modelling and video self-modelling have been maintained over time and transferred across different settings and persons (Bellini & Akullian, 2007).

## **Down syndrome**

One of the most common genetic causes of intellectual disability is Down syndrome (DS) or trisomy 21. This is caused by an extra copy of chromosome 21 and in New Zealand 1 baby is born in every 1000 births (Harper et al., 2004). It has been mentioned that an increase in maternal age may have a high incidence in a baby being born with Down syndrome (Fussell & Reynolds, 2011), but it is not restricted to a single culture, race, social class or historical timeframe. The term Down syndrome arises from the work of Doctor Langdon Down who was the first to provide a systematic and detailed description of the unique features associated with Down syndrome in 1866 (Burns & Gunn, 1993). Some of the physical attributions of individuals with Down syndrome include: hypotonia, epicanthal folds, a small brachycephalic head, flat nasal bridge, small mouth and small ears.

There are several co-morbidities that are also associated more commonly with Down syndrome such as congenital heart defects (50%), vision problems including refractive errors (50%) and cataracts (15%), hearing issues (75%) as well as otitis media (50-70%), gastrointestinal atresia (12%), thyroid disease (15%), leukaemia (1%), sleep apnoea (50-75%), acquired hip dislocation (6%), atlanto-axial instability, coeliac disease (12%), autism spectrum disorders (5%), Alzheimer dementia (40% by the age of 60). Individuals with DS also experience skin problems, growth complications, infections and constipation (Fussell & Reynolds, 2011; Harper et al., 2004). In addition, Fussell and Reynolds (2011) found that most children with Down syndrome with a mild to moderate intellectual disability have less severe behavioural issues.

Individuals with Down syndrome often tend to find it challenging to speak clearly and prefers key words to long sentences. Therefore it has been suggested that giving one instruction at a time and supporting it visually is more suitable when teaching these individuals. In addition, individuals with Down syndrome due to their intellectual disability usually have impaired cognitive skills. They find it difficult to think fast and in complex ways and have poor short term memory. They also find unfamiliar and new situations a challenge and do not learn just by exploration. Therefore, teaching this population a new skill or behaviour in small steps and with repetition has been recommended (Harper et al., 2004).

It has been found that with the right guidance children and adults with Down syndrome are more likely to take an active role in their learning. Also, these individuals are their own person, and all aspects of teaching and effective therapy should focus on their individuality (Burns & Gunn, 1993). Individuals with Down syndrome often have good social skills and prefer to learn visually through pictures, sign language and by modelling

others. With appropriate support, many individuals with Down syndrome are able to find employment and lead independent lives (Harper et al., 2004).

In the past, the life expectancy of individuals with Down syndrome was considered to not go beyond their childhood and therefore learning was not given a high priority. However, with the advancements in the field of medicine and health along with changes in community views, the average life expectancy of an individual with Down syndrome is now 55 years plus. Therefore, the well-being and quality of life for those with Down syndrome is as important (Faragher & Brown, 2005; Harper et al., 2004; Scott, Foley, Bourke, Leonard, & Girdler, 2014).

One concept that has been closely linked with quality of life is numerical ability. Numeracy development is considered to be a critical part of an adult's life in the community setting and the same applies to those with Down syndrome. Hence, making numeracy part of this population is essential in enhancing their overall quality of life (Faragher & Brown, 2005).

### **Down syndrome and Numeracy**

Being numerate can be defined as the “use of mathematics effectively to meet the general demands of life at home, in paid work, and for participation in community and civic life” (Australian Association of Mathematics Teachers, 1997, p. 15). It is commonly perceived that learning numeracy skills is not an easy task for everyone and a lack of numeracy skills for those especially with intellectual disabilities may limit the development of the necessary functional skills required for independent everyday living (Gaunt, Moni, & Jobling, 2012).

Learning mathematics appears to be a difficult process for many individuals with intellectual disabilities such as Down syndrome, but with quality teaching and the required

support, achievement in mathematics is possible. Nevertheless, it has been found that even after receiving the right classroom instructions and support, the numeracy skills of children with Down syndrome were on average 2 years behind their literacy skills with reasons for this unknown (Buckley, 2007). There also seems to be limited knowledge with regards to learners of this population and on how to develop their numeracy skills overtime (Faragher & Clarke, 2014; Gaunt et al., 2012). According to Faragher & Brown (2005), numeracy needs to be cultivated from early childhood and continue through school years until adulthood.

As with typically developing individuals, learning for individuals with Down syndrome continues into their adult life. It has been found, however, that individuals with Down syndrome appear to experience learning barriers such as a lack of opportunity to learn numeracy skills due to parental restrictions. This is mainly due to parental safety concerns which in turn limits these individuals of experiences, making decisions and integrating their existing skills into an independent lifestyle. However, young individuals with Down syndrome want to make decisions for themselves, participate in community activities and live an independent life depending less on others and more on their own resources (Scott et al., 2014). For young individuals with intellectual disabilities such as Down syndrome, acquiring money and purchasing skills increases their ability to independently function within various community settings and is an essential part of life (Colyer & Collins, 1996).

### **Social Learning Theory and Observational Learning**

According to Albert Bandura (1977), social learning theory emphasizes the distinctive roles played by symbolic, vicarious and self-regulatory processes within psychological functioning. The concept of observational learning or modelling was introduced as an intervention method through Bandura's formative work on social learning theory (Bellini &

Akullian, 2007). Most human behaviour is learned through observation and modelling. By observing others, a person forms an idea of how the new behaviour is performed, and this coded information serves as a guide for action on later occasions (Bandura, 1977). Modelling aids in producing certain complex behaviours and is considered to be an indispensable part of learning, especially since the acquisition process can be shortened considerably through modelling. According to Bandura, children acquire most of their skills by observing others rather than learning from personal experience (Bandura, 1977).

In order for learning through observation to occur 4 component processes need to be considered. They include: 1) attention to modelled behaviour; 2) retention of what has been modelled through verbal or imaginal representation; 3) reproduction of the modelled behaviour through retention when an appropriate occasion arises; and 4) motivation to enact the previously observed modelled behaviour (Bandura, 1977; Dowrick, 2012; Grusec, 1992). Attention and motivation are the key aspects in observational learning. If a child does not attend to a model, it is most likely that the child will not imitate the behaviour being modelled. However, a child is most likely to attend to a model if he/she perceives the model to be competent and is able to relate to the model through similarities such as physical characteristics, age, ethnicity and group affiliation (Bellini & Akullian, 2007). The attractiveness and power of the model and the viewing conditions available for the observer further determines the attention being extended to the modelled behaviour. Television viewing is considered to be a compelling mode for grabbing one's attention and holding on to that attention (Grusec, 1992).

Bandura's social learning theory has also offered one of the theoretical foundations for video self-modelling (Hitchcock, Dowrick, & Prater, 2003). Bandura (1997), states that seeing oneself perform a behaviour successfully provides an opportunity to learn how best to perform a specific skill while strengthening one's belief in their ability, thus self-modelling



provides the necessary elements of self-efficacy. Individuals are more likely to pay attention to one's self-image demonstrating valued behaviour, rather than observing someone else in a similar context, and therefore this provides a basis for self-belief (Dowrick, 1999).

### **Video Modelling and Video Self-Modelling**

In order to implement learning through modelling, video technology has been widely used in recent years. Literature reviews and studies indicate the use of video modelling and video self-modelling across various populations and disciplines in order to teach a wide range of skills and behaviours, such as social skills (Bellini, Akullian, & Hopf, 2007; Wilson, 2013), motor behaviours (Dowrick & Raeburn, 1995), communication (Cihak, Smith, Cornett, & Coleman, 2012; Smith, Hand, & Dowrick, 2014), vocational skills (Mechling & Ortega-Hurndon, 2007), academic performance (Decker & Buggey, 2014; Hitchcock et al., 2003; Prater, Carter, Hitchcock, & Dowrick, 2012; Robson, 2013), athletic performance (Boyer, Miltenberger, Batsche, Fogel, & LeBlanc, 2009; Starek & McCullagh, 1999), and functional skills (Alcantara, 1994; Dowrick, 1999; Thomas G. Haring, Breen, Weiner, & Kennedy, 1995; Shipley-Benamou, Lutzker, & Taubman, 2002).

**Video Modelling.** Video modelling (VM) is a procedure which involves displaying a desired behaviour through video representation of that particular behaviour. A video modelling intervention comprises of the individual involved viewing a video demonstration and then reproducing the behaviour being modelled at a later time and date (Bellini & Akullian, 2007; Mechling, 2005). This video demonstration contains specific behaviours which can be modelled by siblings, peers or adults is an attempt to learn new behaviours or change existing ones (Bellini & Akullian, 2007; Dowrick, 1991). Video modelling is also considered as an effective treatment procedure in a variety of disciplines such as social

interactions, medicine and behavioural functioning across different ages, cultures and behaviours (Bellini & Akullian, 2007; Nikopoulos & Keenan, 2007).

There are a number of advantages in using VM interventions when establishing a number of skills amongst students with developmental disabilities. Video modelling allows the removal of irrelevant features and information of the modelled behaviour or skill through video editing. VM can also be implemented with least human contact or interaction and reduces any anxiety or distress it may cause to those who usually face difficulty within a social environment (Bellini & Akullian, 2007). In addition, VM is also considered to be a unique as children are not frequently exposed to this form of learning environment. VM has been shown to increase the learner's attention and motivation to acquire the modelled skill or behaviour (Charlop-Christy & Daneshvar, 2003). According to Mechling (2005), viewing video models can be reinforcing to those who are considered to be visual learners as most of these individuals enjoy watching videos and television. Furthermore, VM does not require any training or prior instructions and is relatively an inexpensive and easily accessible intervention as individuals are able to view their training videos repeatedly and regularly (Bidwell, 2004; Nikopoulos & Keenan, 2007). In present times with the evolution of technology, there are several devices on which individuals are able to view their training videos such as, televisions, computers, laptops, phones, tablets and video cameras.

Most VM research carried out appears to have mainly focused on VM interventions and developmental disabilities such as autism spectrum disorders (ASD). In a meta-analysis carried out by Bellini and Akullian (2007), VM interventions were identified as an effective procedure in specifically teaching purchasing skills to children and young adults with ASD. Haring, Kennedy, Adams and Pitts-Conway (1987) examined the effectiveness of providing shopping training which was coupled with video modelling in order to promote generalisation across various community settings. Three young adults aged 20 years and diagnosed with

ASD took part in the study. For 2 of the participants, training took place in their high school café while the settings for generalisation included a drug store, convenience store and grocery store. For the remaining participant, training was carried out at the local convenience store and generalisation probes took place at a drug store, grocery store and bookstore. The settings for training and generalisation was selected according to each of the participant's needs and convenience. A task analysis for purchasing was constructed and one of the participant's task analysis consisted of the Next Dollar Strategy similar to the present study. Baseline was carried out during training as well as generalisation. All 3 participants performed each of the steps as per their task analysis and a minimum amount of prompting and guidance was offered if a participant performed a step incorrectly. The same procedure was followed during the training phase, however, verbal praise was offered for each correct response until they reached a criterion of 80%, which was followed by a least intrusive prompt procedure. A one-on-one training session was carried out with each participant. The generalisation training phase consisted of viewing videos of models purchasing items in the selected community settings and the participants were asked questions related to what the model was doing on video while they watched the video. Prior to the video modelling phase, each participant had to achieve 90% accuracy during the direct training phase across 3 days consecutively. The researchers concluded that VM, combined with shopping training in a single natural setting, was effective in the generalisation of purchasing skills to community settings for all 3 participants.

Alcantara (1994) conducted a study which investigated the effectiveness of a videotape instructional package which consisted of video viewing, in-vivo prompting and reinforcement on teaching children's grocery shopping skills and the generalisation of these skills across different community settings. Three participants between the ages of 8 and 10 years diagnosed with ASD took part in the study. The video training sessions took place in 3

separate classroom settings and 3 community stores (a grocery store, a convenience store and a drug store) were chosen in order to assess the learned money and purchasing skills. A 32 step task analysis consisting of purchasing skills was created and baseline was observed as per the task analysis in all 3 community settings and verbal praise was offered for all correct responses. Initially all participants were given video instructions which were followed by video instructions and in-vivo training. Verbal prompts were also provided in both instances. The videos showed an adult model purchasing skills at several community stores. In addition, the model also provided verbal instructions related to the purchasing and buying skills being modelled. The results indicated that the use of a video modelling instructional package was an effective training application for promoting purchasing skills and generalisation across various community settings for all 3 participants. These results are contrary to the results from the Haring et al. (1987) study which concluded that VM in conjunction with skill training is an effective procedure in the teaching and generalisation of purchasing skills.

In a study conducted by Mechling et al. (2005) a computer-based video instructional (CBVI) program was utilised to teach purchasing skills to 3 adolescents with developmental disabilities between the ages of 17 and 20 years. The aim of this study was to measure the number of verbal and motor responses made by the participants during purchasing and paying tasks at 3 different fast-food restaurants. The CBVI illustrated an adult model carrying out several purchasing tasks at the 3 restaurants. The video also comprised of still photographs, video captions and voice recordings in order to make the programme more interactive. The study was initially carried out individually at the student's high school library while the generalisation phase took place at the 3 different fast-food restaurants shown in the VM. Following the CBVI, the participants returned to the 3 different fast-food restaurants to carry out purchases. Whenever a participants attempted to perform a task or attended to a certain

task, verbal praise was provided. The researchers concluded that the intervention was successful in promoting the acquisition and maintenance of the learned purchasing skills for students with mild to moderate intellectual disabilities. These results are questionable however, as providing verbal praise even when attempting to perform a task influences the performance of the participant and creates doubt as to whether he/she performed a task through skills acquisition or through the assistance provided via the CBVI.

The results from the above 3 studies demonstrate that VM interventions are a commonly used alternative and appears to be an effective training option when teaching purchasing skills to individuals with intellectual or developmental disabilities.

**Video self-modelling.** Video self-modelling (VSM) is specific video modelling application which allows an individual to reproduce or imitate targeted behaviours by observing him or herself successfully demonstrating the desired behaviour (Dowrick, 1999). It has been mentioned that by observing one's self performing desired behaviour successfully, compared to performing unsuccessful or negative behaviour, increases motivation and attention to reproduce the behaviours being modelled (Bellini & Akullian, 2007). Also, seeing oneself perform a targeted behaviour successfully strengthens the belief in one's ability and provides the essential basis for self-efficacy (Bandura, 1997).

It has been noted that there are several practical considerations which have shaped self-modelling applications. Most video self-models have been created by maximizing the performance of the individuals attempting a target skill/behaviour often through rehearsal and incentives, and by later editing out any distractions or errors in the footage (Dowrick, 1999). Through self-modelling, a number of factors have been found to contribute to a person's efficacy, personal learning and well-being. These include; demonstration of positive self-image, the setting of clear goals and outcomes, the presentation of new skills comprising of pre-existing subskills, reminding of prior capabilities, repetitive viewing of skilled role-play,

being able to apply one's skills to different and new environments, and the demonstration of successful behaviour free of anxiety (Dowrick, 1999). As indicated in previous literature, it is evident that VSM interventions have mainly been effective in the areas of language and communication, behaviour, social skills and task instructions. It has also been considered as an evidence based intervention, mostly with children diagnosed with ASD (Gelbar, Anderson, McCarthy, & Buggey, 2012).

Dowrick (1999) further distinguishes 2 related terms with regards to self-modelling. These are feedforward and positive self-review.

***Feedforward.*** The term feedforward is in contrast with the term feedback which is information received of one's current or past performances, while feedforward refers to any future performances (Dowrick, 1991). Feedforward demonstrates video images of an individual performing target skills not yet achieved which is then edited and put together in sequence as behaviour that is manageable for the individual to perform sometime in the future. Using self-video modelling often determines this future behaviour as it is based on the existing skills of the individual (Dowrick, 1991, 1999). Dowrick (2012) further mentions that feedforward also facilitates rapid changes in an individual's future behaviour or performance as it is the existing component behaviours of an individual that is reconfigured in order to produce new skills. For example, a child may be able to perform some of the steps of a specific cooking task, but not be able to perform these tasks altogether in sequence. Therefore, through feedforward each of the steps are videotaped, edited and compiled in sequence where the child is able to view him or herself perform the cooking task at a future time (Mechling, 2005). Mental time travel (MTT) is a term closely associated with feedforward. Mental time travel refers to an individual's ability to think of future events ahead of time and to remember particular events from the past. It is relatively a new concept

and it seems that neuroscientists are curious to investigate its role in influencing any future change in human behaviour (Dowrick, 2012).

***Positive Self-review.*** Positive self-review (PSR), a term more frequently used in sports psychology, refers to selectively compiling behaviours recorded as best performed by an individual which is considered as manageable but not performed frequently enough in order to produce more consistent behaviour (Dowrick, 1991, 2012). Positive self-review is a form of self-modelling which is produced by revisiting the best exemplars of past behaviour and editing the video footage by eliminating any errors made by the student. This will in turn produce an advanced performance of a behaviour which the student views as being performed by him or herself (Dowrick, 1999; Mechling, 2005). Dowrick (1999) further states that the PSR is an effective procedure in increasing behaviour which has deteriorated over time and is below the desired level. An example for PSR would be when a baseball player is shown a video of himself successfully striking the ball and scoring homeruns. By viewing this footage repeatedly, it is most likely to increase the occurrence of the desired behaviour. It has also been stated that PSR is often used in sports such as gymnastics, skiing and tennis (Dowrick, 1991, 1999).

## **Summary**

From the existing research it is evident that video modelling and video self-modelling has been an effective method in teaching various skills to individuals with intellectual disabilities, especially to individuals with ASD (Bellini & Akullian, 2007; Cihak & Grim, 2008). Similarly, learning through video modelling and video self-modelling should be a helpful method for individuals with DS, as, like those individuals with ASD, they too are considered to be visual learners, and enjoy learning by imitating others instead of just listening to instructions (Harper et al., 2004). However, there appears to be no literature on

video modelling or video self-modelling undertaken with the Down syndrome population on money and/or purchasing skills.

The present study focused on research carried out with regard to the Next Dollar Strategy. A literature review was conducted through PsycINFO, Google scholar, Education Research Complete and PsychARTICLES. The key search terms included the Next Dollar Strategy, one more than technique, intellectual disability\*, Down syndrome, developmental disability\*, video modeling/modelling, video self-modeling/modelling, money skills, shopping skills and purchasing skills. Table 1 displays the “Next Dollar Strategy” or the “one more than strategy” studies. Ten research studies carried out between the years 1984 and 2008 were extracted from the present literature review.



Table 1

*Studies used to teach purchasing skills using the Next Dollar Strategy and studies used to teach the Next Dollar Strategy.*

| <b>Author</b>                      | <b>Aim</b>  | <b>Participants</b>  | <b>Inclusion criteria</b>   | <b>Measures</b>  | <b>Materials used</b>   | <b>Design</b>   | <b>Method</b>  | <b>Results</b>   |
|------------------------------------|---|--|---|--|---|---|--|--|
| Aeschleman & Schladenhauffen, 1984 | To facilitate generalization and maintenance by teaching, purchasing and paying for groceries for a “brown bag” lunch using the Next Dollar Strategy.   | 4 students with developmental disability between 17-18 years of age                          | Was able to communicate verbally, perform all basic self-help skills (dressing, eating, grooming). None were able to read, add or subtract.                                   | A 15 step task analysis and 20 possible responses.   | \$1 x 10 notes were provided prior to all store probes, shopping basket.                      | A multiple probe design across participants.  | Mnemonics training, shopping skills training using the one-more-than- strategy (verbal instruction, role play, in vivo training).  | All participants acquired grocery shopping skills and the acquired skills were maintained for at least 5 months. Role play training contributed significantly in acquiring shopping skills including the successful application of the Next Dollar Strategy. |
| Ayres & Langone, 2002              | To determine if a stand-alone multimedia program could effectively teach the dollar plus purchasing strategy in a classroom setting and, in turn facilitate generalization of the learned skill to a natural environment. | 3 students with mild to moderate intellectual disabilities between the ages of 6 to 10 years | The ability to independently count from 1 to 10, the ability to work on a computer-based task for 10 minutes and have familiarity with a constant time delay (CTD) procedure. | Number of trials performed correctly initiated within 5 seconds and completed within 15 seconds of initiation. | Random number of one dollar notes (3 to 10 notes), software package known as the Dollar Plus. | A multiple probe across participants replicated across community, computer-based sets was used. | Pre-training community probes, community-based probes (full range random dollar probes the specific dollar amount probes), computer- based intervention and post-training. | Student progress on the computer-based intervention did not generalize to the community setting, however, an improvement in purchasing behaviour was observed in the community setting.  |

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| Cihak & Grim,<br>2008 | To examine the effects of acquiring, generalizing, and maintaining purchasing skills by students with autism and moderate intellectual disabilities when incorporating a counting-on-strategy. | 4 students diagnosed with autism and moderate intellectual disabilities between the ages of 15 – 17 years. | Skill deficit on purchasing items, participation in high school with regularly scheduled community based instruction, ability to imitate behaviour modelled by instructor, no physical disability which will impede performing of the skill, agreeing to participate in the study, parental permission and an informal assessment was carried out to determine the ability to count to 30 by ones. | The number and percentage of correct and independent responses using counting on procedures. | 15 black flash cards, \$1 x 5 notes, \$ 5 x 2 notes, \$10 x 1 notes, \$20 x 1 notes, a total of \$45 were provided. | A multiple probe design across behaviours and settings. | Purchasing skills were taught with the use of the Next Dollar Strategy. | All students successfully acquired, maintained and generalized independent purchasing skills of increased dollar amounts using counting on procedures and the Next Dollar Strategy. |
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| Colyer & Collins, 1996 | Will a system of least prompts procedure using a hierarchy consisting natural cues be effective in teaching the Next Dollar Strategy to students with mild to moderate disabilities and will the use of a variety of natural cues in the prompt hierarchy during classroom instruction result in generalization to the community setting. | 4 students diagnosed with mild to moderate intellectual disabilities between the ages of 12 and 14 years. | Ability to understand and respond to verbal directions, fine and gross motor skill ability to grasp, lift, count and extend arm, expressive ability to ask questions concerning directions or requests, ability to distinguish between 1, 5 and 10 dollar bills, ability to count from 1 to 15 the highest dollar amount on which instruction was given, ability to sit at the table for a 10 min interval, ability to see and visually focus on presented flash cards, ability to imitate behaviour modelled by the instructor. (All prerequisite skills were established through informal testing). | The number of correct independent responses initiated within 3 seconds and completed no longer than 3 seconds of counting out dollar notes. | Flash cards, \$1 x 15 notes, \$5 x 2 notes, \$10 x 1 notes was provided before each session. | A multiple probe across participants design was employed. | Least prompts procedure was used to teach the Next Dollar Strategy. | Results indicate that 3 out of the 4 participants were able to demonstrate the successful application of the Next Dollar Strategy and generalise their newly acquired skills in to the community. |
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| Denny & Test, 1995         | To systematically replicate the use of the one-more-than technique with cents-pile modification with one, five and ten dollar bills as well as using mixed training of all dollar amounts.  | 3 high school students aged 17 years with developmental disabilities. | All participants had good verbal communication skills, demonstrated one-to-one correspondence to 20. No student could identify one, five or ten dollar bills prior to the study, while money counting and handling skills were included in each of the participant's IEP. | The number of correct responses on 12 item daily probes which was constructed.              | \$1 x 5 notes, \$5 x 1 notes, \$10 x 1 notes, a total of \$20 was given prior to daily probes as well as community probes. | Multiple baseline design across students were employed.            | One-more-than technique   | All three students mastered the use of the one-more-than technique with cent-pile modification and was maintained for 10 weeks.   |
| McDonnell & Ferguson, 1988 | To compare the relative effectiveness and efficiency of general case in vivo training and general case simulation plus in vivo instruction in teaching students with severe handicaps to purchase items in fast food restaurants. | 6 students between the ages of 11 and 14 years.                       | Students were able to identify numerals 0 to 9, could rote count to 10, count up to 10 items.   | Percentage of correctly performed steps as per the task analysis during each probe session. | Slides and prior to each probe session students were given \$1 x 5 notes.  | A two level multiple baseline across subjects design was employed. | Next Dollar pre-training, general case in vivo training and general case simulation plus in vivo training were carried out. | The results indicate that both strategies led to reliable performance in non-trained settings using the. However, the 3 students who received general case in vivo instruction required fewer training trials to criterion, made fewer errors to criterion and required less training time to criterion than the 3 students who received general case simulation plus in vivo training. |

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| McDonnell, Horner & Williams, 1984 | To examine issues in the context of training severely handicapped high school students a functional community skill.   | 4 students from two integrated high school classrooms for students with moderate and severe handicaps between the ages of 16 and 19 years. | Students were able to rote count from 1 to 10 and were able to recognize numerals from 0 to 9. All students had received prior training in the components of grocery shopping in their regular educational program.   | The number of probe trials performed correctly in non-trained community stores.                            | Flashcards, slides and four sets of Xerox copies of \$1 x 10 notes.          | A multiple baseline design across subjects                      | Training in how to use the Next Dollar Strategy, role playing in the classroom with flashcards, role playing in the class with slides and role playing with slides and in vivo training in one store. | It was found that only after students received combined slide training and in vivo training that functional effects were evident. In addition, it was found that once the participants got used to the cash register, they were able to successfully apply the Next Dollar Strategy. |
| Schloss, Kobza & Alper, 1997       | To explore the efficacy of the use of peer tutoring to teach the functional skill of the use of money using the Next Dollar Strategy for a group of students with moderate to severe mental retardation. | 6 students with moderate mental retardation between 14 and 17 years.   | All students were able to count and add one digit numbers, see and hear within the normal range with or without correction, recognize numbers of at least 0-5, exhibit one to one correspondence for at least 1-5, write or copy + or -, inability to use any effective strategy for making monetary payment. | The number of correct responses as per the 7 step task analysis created to teach the Next Dollar Strategy. | Payment amount index cards, \$1 x 5 notes were provided prior to each phase. | A multiple baseline across subject pairs with changing criteria | Peer tutoring intervention (to teach the Next Dollar Strategy), and a community based assessment was carried out.   | All students mastered the Next Dollar Strategy through the peer tutoring method and was able to generalize this skill to make actual purchases in consumer settings.   |

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| Test, Howell, Burkhardt & Beroth, 1993 | Two experiments were carried out in order to demonstrate the effectiveness of a one-more-than technique in teaching money counting skills to individuals with moderate mental retardation. | <p>Experiment 1- 2 participants who were 24 years and 21 years of age. One participant had a severe mental disability while the other had a moderate mental disability.</p> <p>Experiment 2- 3 students who were 16 years of age and enrolled in a school for students with developmental disabilities.</p> | <p>Ex 1- Each subject understood the purpose of money and could count consecutively to 20 with one to one correspondence. Neither participant was able to identify notes or coins or state their value.</p> <p>Ex 2 – Demonstrated one to one correspondence to 20, participated in community based training in domestic, leisure and vocational domains.</p> | Ex 1 and Ex 2 – The percentage of correct responses on 15 item money probes.                               | <p>Ex 1 - \$1 x 20 notes</p> <p>Ex 2 - \$1 x 20 notes</p> | <p>Ex 1 – a multiple baseline across behaviours</p> <p>Ex 2 – a multiple baseline across subjects</p> | <p>Ex 1 - One more than instruction phase and a cents pile modification (for one participant) was carried out.</p> <p>Instruction phase (one more than technique with cents-pile modification) and a mixed training and “say back” phase was carried out for only one of the participants.</p> | Results from both experiments indicated the effectiveness of the one-more-than technique in producing money counting skills that generalized to non-trained amounts and in making community purchases.  |
| Westling, Floyd & Carr, 1990           | To compare two equivalent groups on generalized department store shopping using money skills. One group was trained in a single setting and the other in 3 different settings.             | 15 public school students classified as moderately, severely or profoundly having mental disability who were between the ages of 13 and 21 years.   | Willingness to participate  | The number of settings in which criterion was achieved and number of sessions needed to achieve criterion. | Pictures of items in department stores, \$1 x 4 notes.    | A quantitative design   | A training phase inclusive of role playing, demonstration and discussion.  | No differences between groups were found as a result of training condition. It was concluded that for some individuals with mental disability, training in either single or multiple settings may be sufficient to learn money skills and for generalization. |

From the literature search, 10 studies were sourced. From these 10 studies, 6 were specifically conducted to teach either purchasing/shopping skills using the Next Dollar Strategy (Aeschleman & Schladenhauffen, 1984; Ayres & Langone, 2002; Cihak & Grim, 2008; McDonnell & Ferguson, 1988; McDonnell et al., 1984; Westling et al., 1990) and 4 studies were carried out to teach the Next Dollar Strategy in order to facilitate money counting or functional math skills (Colyer & Collins, 1996; Denny & Test, 1995; Schloss & Kobza, 1997; Test et al., 1993). Some of the studies refer to the Next Dollar Strategy also as the Counting-On-Strategy, Dollar Plus Strategy and the One More Than Technique. The participants for all 10 studies were diagnosed with mild to severe intellectual or developmental disabilities and ranged between 6 to 24 years of age. All 10 studies employed more than one intervention strategy. These ranged from direct verbal instructions, modelling, role playing, least prompt procedures, flash cards, slides, peer tutoring and in-vivo training. Results from 5 of the studies demonstrated the successful acquisition of the Next Dollar Strategy while generalisation and maintenance was observed as well (Aeschleman & Schladenhauffen, 1984; Ayres & Langone, 2002; Cihak & Grim, 2008; Denny & Test, 1995; Schloss & Kobza, 1997; Test et al., 1993). Verbal instructions and modelling appeared to be the most commonly used strategies in the above studies for teaching the Next Dollar Strategy. The limited number of participants and issues with generalization were noted as the main limitations of these 5 studies.

McDonnell, Horner and Williams (1984), compared 3 different strategies to teach grocery shopping to 4 high school students between the ages of 16 and 19 years diagnosed with severe to high developmental disabilities. They used role playing along with flashcards in the classroom, role playing coupled with slides in the classroom and role playing along with slides and in-vivo training in a store environment was carried out. The findings showed that all 4 students needed a combination of role playing, slides and in-vivo training in a store

environment in order for the intervention to be effective. In a similar study carried out by McDonnell and Ferguson (1988) to compare in-vivo training to general case simulation plus in-vivo training to teach 6 students aged between 11 and 14 years with severe developmental disabilities to purchase items at fast food restaurants. The researchers found that both strategies assisted in increasing purchasing performances, however, the participants who were randomly assigned the general case in-vivo training performed better compared to those who received general case simulation in conjunction with in-vivo training. These results contradict the findings from the previous study carried out by McDonnell et al. (1984), in which the use of more than one intervention strategy was more successful. However, in both of the above studies, all participants received training in how to successfully use the Next Dollar Strategy prior to the intervention phase.

Only one study used a computer based instructional programme with the use of video footage. The study was conducted by Ayres and Langone (2002) with the aim to determine if a multimedia programme alone taught in a classroom setting could teach purchasing skills effectively while facilitating generalization of these skills to an environmental setting. The participants in this study included 3 students with mild to moderate intellectual disabilities and were aged between 6 years 9 months and 10 years 6 months. The study comprised a baseline of pre-training community probes, a computer based intervention for teaching the dollar plus strategy followed by community generalisation. The computer based intervention programme comprised an interactive phase in which input from the user was required in order to progress through the programme along with video models teaching the dollar plus strategy while a constant time delay procedure was used to facilitate the acquisition of skills. At the end of the study, the researchers concluded that even though improvement in all 3 participant's purchasing skills were evident, the Next Dollar Strategy skills did not generalize to the settings in the community. One of the main limitations of the study may have been that



the reinforcing contingencies used during the training phase may have continued into the probes and intervention phases. The researchers further mentioned that additional research should examine the use of computer programmes enhanced with video footage in order to teach functional skills such as purchasing and money counting to individuals with intellectual disability.

Following the review of the existing literature related to teaching money skills and purchasing skills to individuals with intellectual disabilities, using the Next Dollar Strategy showed that this was a successful teaching method for this population. In addition, the use of video modelling and video self-modelling has shown to be effective in teaching functional skills to persons with intellectual disabilities. However, there doesn't appear to be any studies conducted in relation to teaching the Next Dollar Strategy using video modelling and video self-modelling specifically with individuals with Down syndrome. Therefore, in order to fill this gap in research, the subsequent research questions have been created for the present study.

### **Research Questions**

1. What are the effects of teaching the Next Dollar Strategy to adolescents and young adults with Down syndrome using video modelling and video self-modelling?
2. Is video modelling or video self-modelling the more effective way to teach the Next Dollar Strategy?
3. What are the perceptions of the participants and their parents/caregivers on the effectiveness of learning the Next Dollar Strategy using video modelling and video self-modelling?

## **CHAPTER 2: Method**

### **Research Design**

The present study employed a non-current multiple baseline design yoked across participants alternating between video self-model (VSM) and video model (VM) treatments. A yoked control procedure is a design employed when matched participants are paired together such as in age and/or gender and receive the same intervention or the same reinforcement, but with different contingencies (Salkind, 2010). This design offers an efficient and experimentally sound method in which the effects of 2 or more distinct treatments (VSM or VM) on the target behaviour can be compared or measured (Cooper, Heron & Heward, 2007).

The participants were yoked (paired) according to their age, gender, and level of money skills. Following baseline (A), the yoked participants alternated between VSM (B) and VM (C) treatments. The first participant of the yoked pair who was selected randomly received the VSM treatment initially, while the second participant received the VM treatment first. If the participant did not successfully complete all twelve steps of the task analysis, then they received the alternative treatment. This design provided the opportunity to compare the effects of the VSM treatment as well as the VM treatment and to observe if there was a difference between these 2 treatments.

### **Ethical Consideration**

Prior to the recruitment of participants, ethical approval was obtained from the University of Canterbury Human Ethics Committee (see Appendix L). Information sheets (Appendix A) outlining the purpose of the study and information regarding the study was provided to all 6 participants and their parents prior to the initial interview. Informed consent was obtained on the day of the initial interview and assessment. A copy of the consent form

can be found in Appendix B. Because the study was undertaken in a “real life” environment, an information sheet regarding the study was also provided to the owner/manager of the supermarket which was the chosen setting for the video making and to the 4 shop assistants who volunteered to take part in the VSM and VM videos. Informed consent was obtained prior to filming and the shop assistants were offered the opportunity to view the videoed content if they wished. The names of all participants’ have been changed for anonymity. Participation in the present study was voluntary and participants and their parents were able to withdraw at any stage during the course of the study.

### **Recruitment of Participants**

In order to recruit participants, a poster which can be found in appendix M, included the purpose and a brief description of the study was sent via email to all parents and members of a local club formed specifically for young individuals with Down syndrome. The club is a peer support club held weekly during the school term where teenagers and young adults with Down syndrome come together to participate in various social activities and events in order to develop friendships and improve their social skills. The club also provides a platform for these young individuals to learn, grow, and be independent.

The parents of 6 club members who were keen for their son/daughter to take part in the study responded to the poster and made contact with the researcher through email. The researcher then made contact via telephone/email and scheduled a meeting at a time and day convenient for all for an initial interview and money assessment task. In addition, an information pack containing the information sheets and consent forms for both parents and the participant were posted following the initial email contact. These were signed and returned to the researcher on the day of the initial interview and assessment.

**Initial Interview.** In order to establish eligibility to the study, the responding parents and their child were invited to a screening interview and a small money assessment task at the Pukumanu-Dovedale Centre at the University of Canterbury.

Inclusion to study criteria comprised of: 1) being able to speak and understand English; 2) have fine motor skills which will aid in handling coins and notes; 3) the ability to count at least, up to 30; 4) recognition of NZ currency (10c, 20c, 50c, \$1, \$2, \$5, \$10, and \$20); and 5) understand the place value of money. Comprehension of the value of money was required in order to avoid confusion between the different coins and notes when paying for items.

**Semi structured interview.** A semi structured interview was carried out, the purpose being to establish eligibility, obtain demographic information such as; name, age, gender, as well as parent's contact details in case of an emergency, and to ascertain what each participant and their parents hoped to gain from being a part of the study.

**Initial assessment.** New Zealand currency including 10c, 20c, 50c, \$1, \$2, \$5, \$10 and \$20 was used to assess each participant's knowledge and identification of NZ currency and place value. A number line consisting of numbers from 0-30 which was printed in bold black and sized adequately was used in order to assess each participant's knowledge and identification of numbers.

**Entry test.** A pre-test was also carried out to assess the suitability to participate in the study using some items which were adapted from the Vineland - II Adaptive Behaviour Scales, subtests, daily living skills domain (Community- Understanding Money), which assisted in determining each participant's numeracy and money skills (Sparrow, Cicchetti & Balla, 2008).

## Participants

The participants for the present study included 6 adolescents and young adults with Down syndrome. There were 2 males and 4 females aged between 13 years and 21 years of age ( $M = 18$  years). They were all of New Zealand/European descent and were members of the Canterbury UPP club. Table 2 below outlines the demographic information of each participant and their knowledge of numeracy and money.

Table 2

*Demographic information of the six participants and their results to the money assessment task.*

| <b>Name of participant</b> | <b>Age</b> | <b>Gender</b> | <b>Counts from 1-30</b> | <b>Recognition of numbers from 0-30</b> | <b>Recognition of NZ currency</b> | <b>Understanding place value</b> |
|----------------------------|------------|---------------|-------------------------|---|-----------------------------------|----------------------------------|
| Participant 1              | 21         | F             | Yes                     | Yes                                     | Yes                               | Yes                              |
| Participant 2              | 17         | M             | Yes                     | Yes                                     | Yes                               | Yes                              |
| Participants 3             | 13         | F             | Yes                     | Yes                                     | Yes                               | Yes                              |
| Participant 4              | 18         | F             | Yes                     | Yes                                     | Yes                               | Yes                              |
| Participants 5             | 20         | M             | Yes                     | Yes                                     | Yes                               | Yes                              |
| Participant 6              | 13         | F             | Yes                     | Yes                                     | Yes                               | Yes                              |

## Setting

The initial screening and 2 simulated shopping tasks which were part of recording baseline took place at the Pukumanu/Dovedale Centre. A supermarket from a well-known supermarket chain was used for one baseline recording, the video making, post intervention and follow-up phases. In addition another supermarket from another well-known chain was used for the generalisation phase. Both supermarkets were in close proximity of the centre and each other. All video making took place during normal working hours.

## Materials

**Simulated shopping materials.** A cardboard supermarket, a few actual confectionary wrappers which were stuffed to look real, self-made price tags and real money was used as part of recording baseline 1 and 3.

**Video equipment.** A Samsung full HD camcorder and an iPhone 5S was used in combination to video each participant. Once the videoing was completed, the footage was downloaded onto a Windows 8 PC and all the video editing was carried out using Windows Movie Maker. The edited video clip was then converted into an Mpeg format and burnt onto a DVD disk to enable all participants to view their video using an ordinary DVD player as well as a computer/laptop.

**Real environment.** Each of the 6 participants were asked to bring actual money, preferably small money including \$1 and \$2 dollar coins as well as a purse/wallet and was given the choice of purchasing a few items or an item(s) decided between the parent and participant.

## Measures

**Development of the task analysis.** The researcher, with the assistance of a fellow post-graduate student, visited the supermarket and the researcher observed and recorded the step-by-step process of shopping for a couple of items. The shopping process was task analysed in twelve steps including the use of the Next Dollar Strategy.

The twelve steps were:

1. Participant enters supermarket.
2. Selects item or items.
3. Goes to the appropriate checkout.
4. Gives item/items to the cashier.
5. Exchanges appropriate social greetings.

6. Waits for the total amount to be shown/provided.
7. Counts exact amount with an extra dollar for the cents (the Next Dollar Strategy).
8. Hands over money to the cashier.
9. Waits for change (if there is any).
10. Puts the change back securely back inside purse/wallet.
11. Collects item/items and says “Thank you”.
12. Leaves supermarket with purchased item/items.

### **Data Collection**

**Task Analysis.** In both the simulated and supermarkets, the 12 step task analysis, as described above, was scored either as ‘correct’, ‘incorrect’ or ‘no response’ for each of the twelve steps. A ‘correct’ response was noted when a participant initiated and implemented each step of the task analysis independently. An ‘incorrect’ response was noted when a participant performed a step incorrectly (e.g. failing to use the Next Dollar Strategy when paying for purchases) and a ‘no response’ was recorded if a participant failed to initiate a step following completion of the previous step.

**Video viewings chart.** A video viewing chart (Appendix N) was provided to all participants to record the number of times, and the date, they watched each of their videos. A minimum of 6 viewings was requested by each participant over a period of 2 weeks.

**Social validity.** Self-developed social validity questionnaires (Appendix K and J) were given to each participant and their parents to complete at the end of their study in order to determine their overall satisfaction of the intervention programme and its effectiveness. Answers for each of the 5 questions was scored on a Likert Scale measuring from 1 to 3. A score of 1 was recorded if the answer was “not important”, a score of 2 was recorded for “moderately important” and a score of 3 meant the participant and their parents answered as

“very important”. Extra space was also allocated below each question in order for the participants and/or their parents to write down any further comments or suggestions.

## **Procedure**

The following procedures were carried out as part of the present study:

**VM and VSM video making** – The making of the video occurred on a date and a time suitable for the participant and their parents. Prior to the video making, the researcher created a story board representing each step of the task analysis to assist with filming each step out of sequence. This was done in order to eliminate any practice effect and to avoid participants learning while being filmed.

**Filming** – Filming of each video occurred on the chosen supermarket premises during a normal working week day. The participant was instructed to perform each of the steps, as per the 12 step task analysis, out of sequence with the researcher filming them.

**VSM and VM video editing** – Once all the steps of the task analysis were filmed, the researcher edited each video to be in sequence and any errors or distractions which occurred while making each video was edited out. The completed video was transferred onto a single DVD, labelled and passed on to each participant to take home. Each video was approximately between 2-3 minutes long and was edited to show the participant following each of the 12 task analysis steps at the supermarket without any assistance.

**Voice over** -Voice overs were included in each video, as they were 5 helpful and important tips for the participants to remember when shopping. However, voice overs were not included in one of the yoked pair’s VSM and VM as the voice overs recorded by one of the participants in that pair was not clear because the speech of the participant was inaudible. This yoked pair did not have any voice overs at steps 6, 7 and 10 of the 12 step task analysis.



Voice overs included in the VSM and VM were:

“If I don’t have enough money, leave the items on the counter, say thank you and leave” (over step 6 and step 7)

“If a stranger offers to pay, say no thank you politely” (over step 7)

“Always give one more dollar for the cents” (over step 7)

“If there is no cents, do not give one more dollar” (over step 7)

“There will be no change if it is .91 cents or more” (over step 10)

Visual text prompts were also used in the making of the VSM and VM videos to assist each participant to learn and gain a better understanding of each step as per the task analysis.

**Text prompts** – Text prompts were also included on the VSM and VM pictures to help the participants relate each step performed along with the visual text prompt for a better understanding. The following text prompts were included at each step of the task analysis.

Step 1 - Entering supermarket

Step 2 - Selecting item/items

Step 3 - Going to the checkout

Step 4 and Step 5 – Greeting and handing over the item/items

Step 6 - Total amount \$.....

Step 7 - Counting the right amount - using the Next Dollar Strategy - always give one more dollar for the cents - total amount given \$.....

Step 8 - Handing over the money

Step 9 - Waiting for change (if there is any)

Step 10 - Putting change back securely back inside purse/ wallet

Step 11 - Collecting items and saying “Thank you”

Step 12 - Leaving supermarket

**The intervention phase** - Once each of the VSM and VM videos were completed, the first participant of the yoked pair viewed their video self-model while the second participant viewed their video model. Each participant was requested to watch their video for at least 6 sessions over 2 weeks and record the number of times and the date each video was viewed on the video viewing chart which was provided.

**Post intervention 1**- Two weeks later, each participant was taken back to the same supermarket which was the setting for the video making and one baseline recording, and was requested to buy an item using the “Next Dollar Strategy” independently. If a participant was unable to demonstrate the use of the “Next Dollar Strategy” independently and was not able to complete all of the purchasing steps in the task analysis correctly, the treatment design was alternated so they received the opposite video for the following 2 weeks.

The first participant of each yoked pair was given the VM (video self-model of the second participant in the pair) while the second participant viewed their VSM. Similar to the previous phase, the participants were requested to view their video for at least 6 sessions over the following 2 weeks and record the number of the viewed sessions and date on the chart provided.

**Post intervention 2** – After 2 weeks all participants were taken to the supermarket again and were requested to purchase an item(s) using the Next Dollar Strategy.

**Follow up and generalisation** – Following post intervention 2, a follow up was carried out approximately 1 month later in order to establish maintenance of the learned purchasing and Next Dollar Strategy skills in the same environment used for the second baseline session and for the video making. In order to determine if participants were able to generalise their learned purchasing and Next Dollar Strategy skills in a different environment, generalisation was carried out at a different well-known supermarket. Due to time constraints, follow up and the generalisation phase were carried out on the same day with 20 minutes time between each phase.

**Social validity questionnaire-** At the end of the follow up and generalisation phase, the self-developed social validity questionnaire was given to each participant and their parent (mother) to complete at a café with a nice and quiet environment situated next to the supermarket in which generalisation was carried out.

### **Reliability**

Two post graduate students were trained by the researcher to serve as an inter-rater agreement observers. The training procedure consisted of giving the observer a copy of the task analysis and the researcher explained each of the twelve steps listed in the task analysis. The observer was then requested to record a (✓) for a 'correct' response, (X) for an 'incorrect response' or (-) for 'no response' for each of the task analysis steps performed by the participant during the sessions. An inter-observer reliability percentage of 90% or more has been considered to be desirable and avoids any doubts which may arise with regards to the procedures being consistent, rigorous and fair (Richards, 1999). Inter-observer agreement percentage was calculated using the following calculation index.

$$\text{Interobserver reliability (\%)} = \frac{\text{No. of Agreements}}{(\text{No. of Agreements} + \text{No. of Disagreements})} \times 100$$

The inter-observer reliability percentage was calculated as 99.2% for all 6 participant's performances over the baseline and intervention phases.

### **Data Analysis**

In order to observe behaviour change, a count of the number of correct responses on the 12 step task analysis occurred at baseline, post intervention 1 and the same procedure was carried out during post intervention 2, follow-up and generalisation.

Individual scores were then tabled and graphed. Data collected from each participant was compared against their yoked participant and each yoked pair was compared with the other yoked pairs, and any difference between the participants and yoked pairs was noted.

Each of the social validity questionnaires were scored using a 3 point Likert Scale with each of the participant's scores totalled and then compared.

## CHAPTER 3: Results

The results of the study will be presented firstly as a group, and then secondly graphically for each of the yoked pairs as per the 12 step task analysis throughout each of the intervention phases. Finally, a table showing the steps performed correctly and the error steps performed by all 6 participants will be presented.

### Group Results

Table 3 indicates that all 6 participants increased their overall purchasing skill acquisition on the 12 step task analysis following their VSM and VM interventions. Three of the 6 participants learned the Next Dollar Strategy. Participant 5 successfully applied the Next Dollar Strategy at post intervention 2 (following her VM), participant 2 at post intervention 1 and post intervention 2 (following her VM and VSM) and only participant 1 was able to apply the Next Dollar Strategy successfully and complete the 12 step process at post intervention 2 (following her VM), follow-up and generalisation phases.

**Post intervention 1.** During the post-intervention 1 phase, none of the participants got all the 12 task analysis steps correct. Participant 2 who was in the first yoked pair and received the VM intervention first was able to successfully apply the Next Dollar Strategy (step 7), however, she got “putting change securely back inside purse” (step 10) incorrect.

Of the 6 participants, participant 1 and participant 5 who received the VSM intervention got the Next Dollar Strategy incorrect while performing the rest of the 11 steps correctly. An increase in the steps performed correctly from baseline was evident in participant 3 following his VSM intervention and participant 6 following her VM intervention. There was no change in the performance of participant 4 when compared with his baseline data.

**Post intervention 2.** At the post intervention 2 phase, participant 1 and participant 5 performed all 12 steps correctly and were able to perform the Next Dollar Strategy

successfully following their VM interventions. Only participant 2 was able to successfully apply the Next Dollar Strategy following her VSM intervention, however, she performed step 10 incorrectly similar to her performance at post intervention 1. Participant 4 and participant 6 performed 11 steps correctly but the Next Dollar Strategy was incorrect. An overall increase in steps correct following the VSM intervention was observed in participant 4 and participant 6.

**Follow-up.** During the follow-up phase, only participant 1 was able to perform all 12 steps correctly. Participant 2, participant 4 and participant 6 performed 11 steps correctly – they were all unable to perform the Next Dollar Strategy correctly.

**Generalisation.** At the generalisation phase, participant 1, participant 4 and participant 5 performed all 12 steps correctly. Participant 2 and participant 3 performed 11 steps correctly, but they could not correctly perform the Next Dollar Strategy.

## **Individual Results**

### **First Yoked Pair**

Participant 1 and participant 2 were yoked as per their gender and age. Participant 1 was randomly selected to receive the VSM intervention while participant 2 received the VM intervention first.

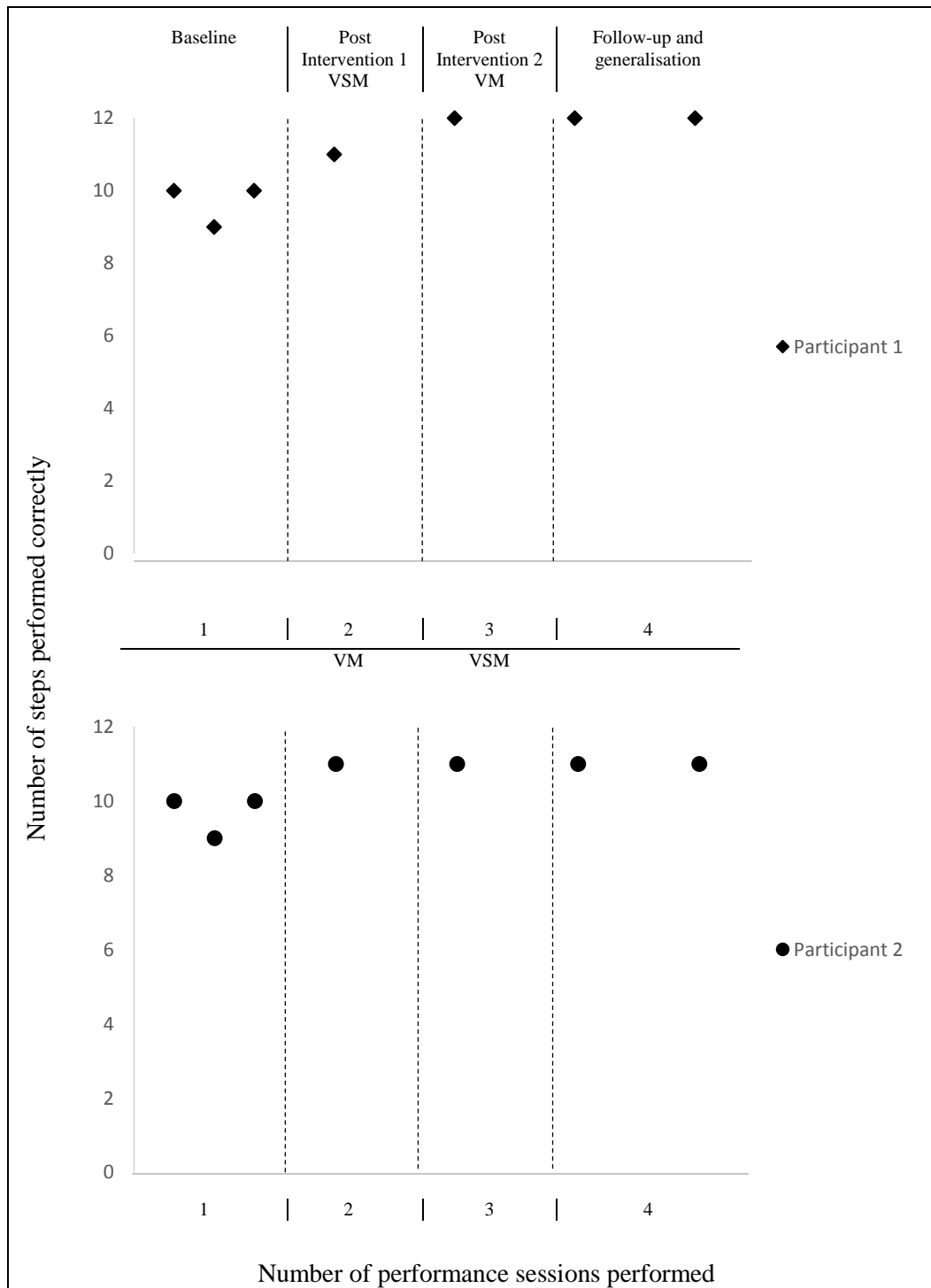


Figure 1: Number of steps performed correctly as per the 12-step task analysis undertaken for participant 1 and participant 2 (first yoked pair).

Figure 1 indicates the number of steps performed correctly across baseline, post intervention 1, post intervention 2, follow-up and generalisation for participant 1 and participant 2 (first yoked pair).

### **Participant 1.**

*Baseline.* Over the 3 baseline observations, participant 1 performed 9 or 10 steps correctly of the 12 step procedure. She did not correctly perform step 7 the Next Dollar Strategy on all 3 baseline occasions and nor did she correctly complete step 11 at baseline 1, steps 3 and 6 at baseline 2 or step 2 at baseline 3.

*Post intervention 1.* Participant 1 received the VSM intervention first and viewed her VSM video 9 times over the 2 week period. At the end of this time period, she was she correctly performed 11 of 12 steps as per the task analysis. The step she was unable to perform correctly was step 7, the “Next Dollar Strategy” step. As she did not demonstrate 100% skill acquisition of all 12 steps, the VM intervention was provided for the post intervention 2 phase.

*Post intervention 2.* Participant 1 viewed her VM video 15 times over the following 2 weeks. At the post intervention 2 measure, participant 1 demonstrated successful application of the Next Dollar Strategy thus successfully completed all 12 steps of the task analysis.

*Follow up and generalisation.* During the follow-up and generalisation phases, participant 1 successfully completed all 12 steps and a 100% skill acquisition was maintained.

### **Participant 2**

*Baseline.* During the 3 baseline phases participant 2 correctly performed 9 or 10 steps as per the 12 step task analysis. Participant 2 was unable to perform step 7, the Next Dollar Strategy over all 3 baseline phases and she also performed step 12 at baseline 1, step 3 and step 10 at baseline 2 and step 10 at baseline 3 incorrectly.

*Post intervention 1.* Participant 2 received the VM intervention first and viewed her VM video 6 times throughout the 2 week period. Following this phase, she correctly performed 11 of 12 steps as per the task analysis including step 7, the successful application



of the Next Dollar Strategy. The step she was unable to perform correctly was step 10, ‘putting the change securely back inside purse’.

*Post intervention 2.* Participant 2 was offered the VSM intervention next and she viewed her VSM video 7 times over the 2 week period. During this measure, participant 2 was able to successfully apply the Next Dollar Strategy and the step she performed incorrectly was step 10 which was consistent to her performance at P1.

*Follow-up and generalisation.* Participant 2 correctly performed 11 of 12 steps correctly during the follow-up and generalisation phases. She was unable to perform step 7, the Next Dollar Strategy during both phases but did perform step 10 correctly.

### **Second Yoked Pair**

Participant 3 and participant 4 were yoked according to their gender and age. Participant 3 was randomly selected to receive the VSM intervention first while participant 4 received the VM intervention first.

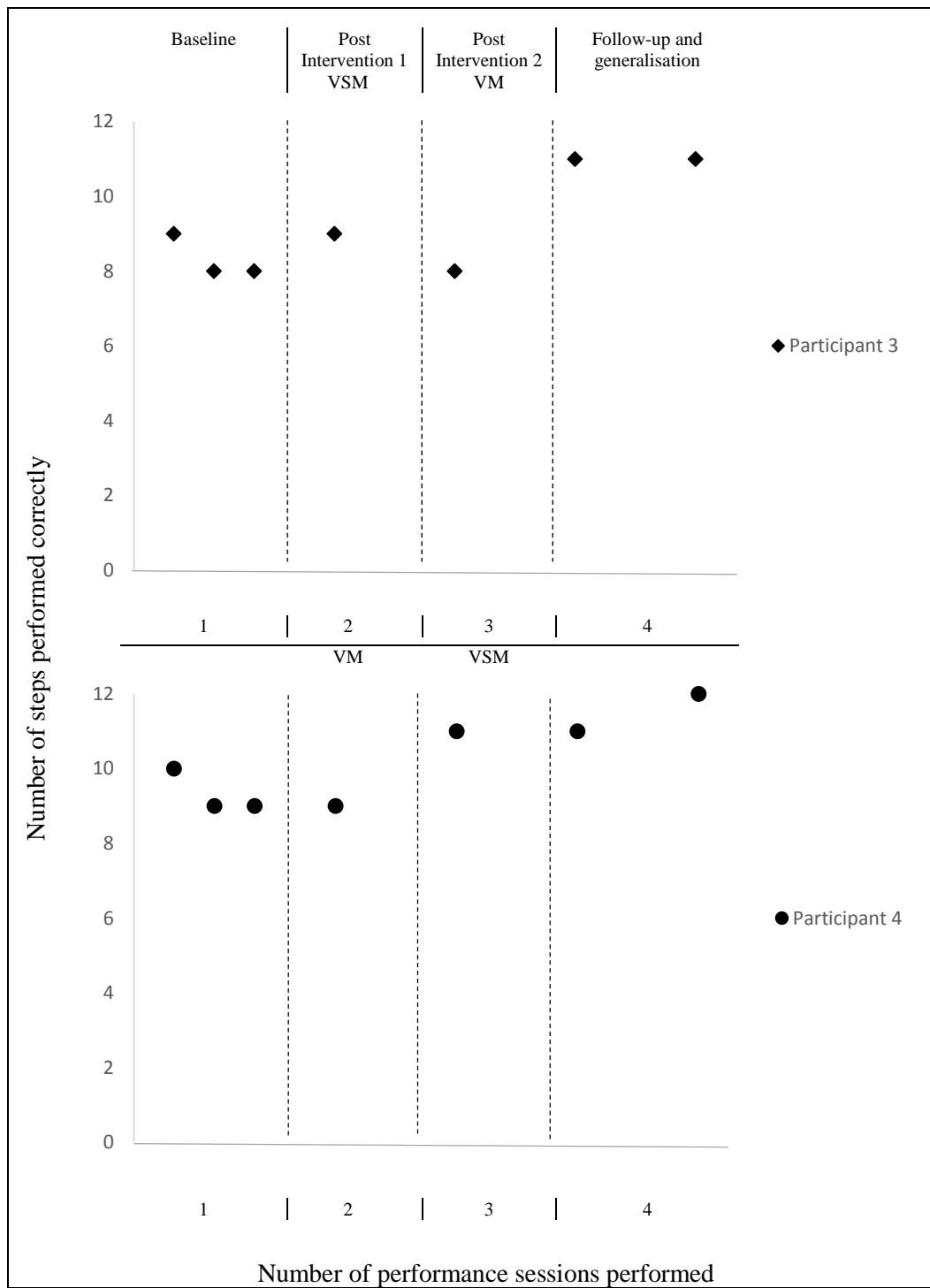


Figure 2: Number of steps performed correctly as per the 12-step task analysis undertaken for participant 3 and participant 4 (second yoked pair).

Figure 2 indicates the number of steps performed correctly across baseline, post intervention 1, post intervention 2, follow-up and generalisation for participant 3 and participant 4 (second yoked pair).

### **Participant 3**

*Baseline.* Over the 3 baseline phases, participant 3 correctly performed 8 or 9 steps as per the 12 step task analysis. He failed to correctly perform step 7, the Next Dollar Strategy over all 3 baseline phases. He also failed to perform step 8 and step 10 at baseline 1, step 6, step 9 and step 10 at baseline 2 and step 10, step 11 and step 12 at baseline 3.

*Post intervention.* Participant 3 received the VSM intervention first and viewed his VSM video 10 times during course of 2 weeks. At this measure, he correctly performed 9 of 12 steps. The steps he was unable to perform correctly were, step 7, the successful application of the Next Dollar Strategy, step 10 - putting change securely back inside wallet, and step 11 - saying "Thank you" after collecting purchased items.

*Post intervention 2.* Participant 3 was then offered the VM intervention and he viewed his VM video 10 times during the course of 2 weeks. During this phase, he correctly performed 8 of 12 steps as per the task analysis. The steps participant 3 failed to perform were, step 6 - waiting for the total amount to be shown/provided, step 7 - the successful application of the Next Dollar Strategy, step 10 - putting change securely back inside wallet, and step 11 - saying "Thank you" when collecting the purchased items.

*Follow-up and generalisation.* During the follow-up and generalisation phase, participant 3 correctly performed 11 of 12 steps correctly. The step he failed to perform was step 7 - the successful application of the Next Dollar Strategy.

### **Participant 4**

*Baseline.* Participant 4 performed 9 or 10 steps correct as per the 12 step task analysis over all 3 baseline phases. He too failed to perform step 7 - applying the Next Dollar Strategy successfully over all 3 baseline phases. He also was unable to correctly perform step 6 at baseline 1, step 6 and step 10 at baseline 2 and step 6 and step 11 at baseline 3.

*Post intervention 1.* Participant 4 received the VM intervention first and viewed his VM video 6 times over the 2 week period. During this measure, he correctly performed 9 of 12 steps as per the task analysis. The steps he was unable to perform correctly were, step 6 - waiting for the total amount to be shown/provided, step 7 - the successful application of the Next Dollar Strategy, and step 10 - putting change securely back inside wallet.

*Post intervention 2.* Participant 4 was then provided the VM intervention and he viewed his VM video 6 times over the course of 2 weeks. During this measure, he correctly performed 11 of 12 steps as per the task analysis. The step participant 4 failed to perform correctly was step 7 the Next Dollar Strategy.

*Follow-up and generalisation.* During the follow-up phase, participant 4 failed to correctly perform step 7 the Next Dollar Strategy. However, he demonstrated the successful application of the Next Dollar Strategy during the generalisation phase.

### **Third Yoked Pair**

Participant 5 and participant 6 were yoked according to their gender and age. Participant 5 was randomly selected to receive the VSM intervention first while participant 6 received the VM intervention first.

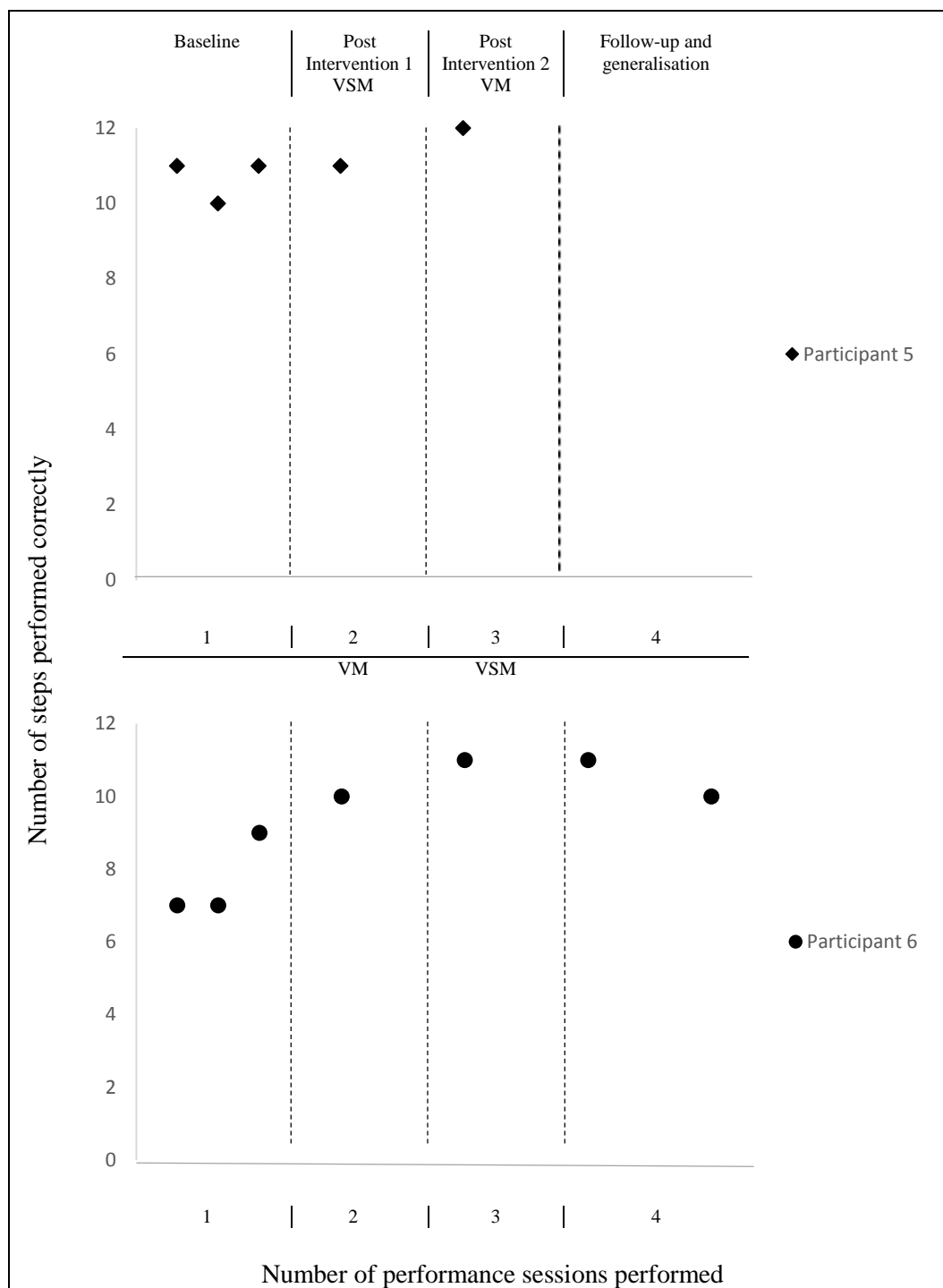


Figure 3: Number of steps performed correctly as per the 12-step task analysis undertaken for participant 5 and participant 6 (third yoked pair).

Figure 3 displays the number of steps performed correctly as per the 12-step task analysis for the third yoked pair of participant 5 and participant 6.

### **Participant 5**

*Baseline.* Participant 5 correctly performed 10 or 11 steps as per the task analysis at all 3 baseline phases. She failed to correctly perform step 7, the Next Dollar Strategy over all 3 baseline phases. She also failed to correctly perform step 10 - putting change back securely inside purse at baseline 2.

*Post intervention 1.* Participant 5 received the VSM intervention first and viewed her VSM video 9 times during the 2 week period. At this measure, she correctly performed 11 of 12 steps as per the task analysis. The step she failed to perform correctly was step 7, the successful application of the Next Dollar Strategy.

*Post intervention 2.* The VM intervention was then offered to participant 5 and she viewed her VM video 6 times during the course of 2 weeks. At this phase, she demonstrated 100% skill acquisition including the successful application of the Next Dollar Strategy.

*Follow-up and generalisation.* During the follow-up phase, participant 5 was unable to correctly perform step 3 – going to the appropriate checkout, step 7 – the Next Dollar Strategy and step 8 – handing over the money to the cashier. At the generalisation phase, participant 5 correctly performed all 12 steps as per task analysis and reached 100% skill acquisition.

### **Participant 6**

*Baseline.* At baseline, participant 6 performed 7 or 9 steps as per the twelve step task analysis during all 3 baseline phases. She failed to correctly perform step 7, the Next Dollar Strategy over all 3 baseline phases. She also incorrectly performed steps 2, 4, 5 and 11 at baseline 1, steps 3, 5, 10 and 11 at baseline 2 and steps 8 and 11 at baseline 3.

*Post intervention 1.* Participant 6 received the VM intervention first and she viewed her VM video 8 times over the 2 week period. During this phase, she correctly performed 10 of 12 steps as per the task analysis. The steps she was unable to perform correctly were, step

5 - failing to exchange appropriate social greetings and step 7 - applying the Next Dollar Strategy successfully.

*Post intervention 2.* Participant 6 was then provided the VSM intervention and she viewed her VSM video 8 times over the course of 2 weeks. At this measure, she correctly performed 11 of 12 steps as per the task analysis. The step participant 6 failed to perform was step 7, the successful application of the Next Dollar Strategy.

*Follow-up and generalisation.* During the follow-up phase, participant 6 performed 11 of 12 steps correctly and the step she failed to perform correctly was step 7, the successful application of the Next Dollar Strategy. During generalisation, she correctly performed 10 of 12 steps and the steps she performed incorrectly were; step 7 - applying the Next Dollar Strategy successfully and step 11 - saying “Thank you” while collecting her purchases.

The following table represents the number of steps performed correctly (NOC) as per the 12 step task analysis and the error steps performed by all 6 participants. The table provides an overview of which of the steps each participant’s performed correctly and incorrectly at baseline 1, baseline 2, baseline 3, post intervention 1, post intervention 2, follow-up and generalisation phases. In addition, the increase in skill acquisition for each of the 6 participants from the beginning until the end of the study can be viewed to support the visual graphs presented above.

Table 3

*Number of steps performed correctly (NOC) as per the 12 step Task Analysis and the error steps performed by all six participants*

| Participant   | 1   |                      | Baseline |                       | 3   |                      | P1<br>VSM |                  | P2<br>VM |                     | Follow-up |                 | Generalisation |                |
|---------------|-----|----------------------|----------|-----------------------|-----|----------------------|-----------|------------------|----------|---------------------|-----------|-----------------|----------------|----------------|
|               | NOC | Error                | NOC      | Error                 | NOC | Error                | NOC       | Error            | NOC      | Error               | NOC       | Error           | NOC            | Error          |
| Participant 1 | 10  | Steps 7 and 11       | 9        | Steps 3,6 and 7       | 10  | Steps 2 and 7        | 11        | Step 7           | 12       | -                   | 12        | -               | 12             | -              |
| Participant 3 | 9   | Steps 7,8 and 10     | 8        | Steps 6,7,9 and 10    | 8   | Steps 7,10,11 and 12 | 9         | Step 7 and 10    | 8        | Steps 6,7,10 and 11 | 11        | Step 7          | 11             | Step 7         |
| Participant 5 | 11  | Step 7               | 10       | Steps 7 and 10        | 11  | Step 7               | 11        | Step 7           | 12       | -                   | 9         | Steps 3,7 and 8 | 12             | -              |
|               | VM  |                      | VSM      |                       |     |                      |           |                  |          |                     |           |                 |                |                |
|               | NOS | Error                | NOS      | Error                 | NOS | Error                | NOS       | Error            | NOS      | Error               | NOS       | Error           | NOS            | Error          |
| Participant 2 | 10  | Steps 7 and 12       | 9        | Steps 3,7 and 10      | 10  | Steps 7 and 10       | 11        | Step 10          | 11       | Step 10             | 11        | Step 7          | 11             | Step 7         |
| Participant 4 | 10  | Steps 6 and 7        | 9        | Steps 6,7 and 10      | 9   | Steps 6,7 and 11     | 9         | Steps 6,7 and 10 | 11       | Step 7              | 11        | Step 7          | 12             | -              |
| Participant 6 | 7   | Steps 2,4,5,7 and 11 | 7        | Steps 3,5,7,10 and 11 | 9   | Steps 7,8 and 11     | 10        | Steps 5 and 7    | 11       | Step 7              | 11        | Step 7          | 10             | Steps 7 and 11 |



### **Social Validity Questionnaire**

All 6 participants completed a social validity questionnaire consisting of 5 questions each (please refer to appendices J and K). All of the questions were scored upon a 3 point Likert Scale and all participants scored the highest score for each of their questionnaires. Participant 1, participant 3 and participant 5 preferred watching their VM video compared to their VSM video while participant 2, participant 4 and participant 6 enjoyed watching their VSM video compared to their VM video. Furthermore, all 6 participants enjoyed being a part of the present study and they all felt that the study helped them improve their existing money skills.

A parent (mother) of each participant completed a social validity questionnaire as well. It appears that 5 of the parents felt that their children gained enough knowledge to improve their money skills by taking part in the present study while one parent was undecided as she felt her daughter may have already developed “bad habits” with relation to money skills. Furthermore, 4 of the parents stated that ongoing practice was needed and it was good to have the knowledge and skills learnt from the present study to work with in the future. Participant 3’s mother also expressed concerns about her son finding it a little hard to understand the concept of money and the Next Dollar Strategy even though he loves shopping. Overall, both participants and parents reported the study was of value to them while more opportunity to practice the newly learnt skills may help in retaining and maintaining these skills.

### **Summary**

The overall results of the study indicate that both the VM and VSM interventions did assist all 6 participants to improve on their purchasing skill acquisition. However, when learning the Next Dollar Strategy, the VM intervention appeared to have been more effective

compared to the VSM intervention. All 6 participants enjoyed participating in the study and looked forward to putting their newly acquired skills into practice.

## **CHAPTER 4: Discussion**

The aim of the present study was to measure the effects of teaching the Next Dollar Strategy to 6 adolescents/young adults with Down syndrome (DS) using video modelling (VM) and video self-modelling (VSM), and to find which of these methods was the most effective in teaching the Next Dollar Strategy. In addition, the perceptions of the participants and their parents were gathered to determine the social validity of the study and use of the VM and VSM as an intervention.

The overall results indicate that both the VM and VSM interventions were effective for all 6 participants by increasing the steps correct when purchasing their items at the supermarket. In terms of which teaching strategy was the most effective in teaching the Next Dollar Strategy, the results indicate that video modelling was more effective than the video self-modelling strategy for participant 2 and participant 5 during the teaching phase while participant 2 and participant 5 were able to demonstrate the Next Dollar Strategy correctly at follow up after receiving both the VSM and VM interventions. However, the findings from the present study suggest that the VM and VSM interventions may be more suited to teach purchasing skills but not the Next Dollar Strategy to adolescents/young adults with Down syndrome. The results from the social validity questionnaire found that all 6 participants enjoyed taking part in the study. Three of the participants enjoyed watching their VM video more than their VSM video and 3 of the participants preferred their VSM video compared to their VM video. A sense of accomplishment was evident in all the participants. As per social learning theory, Bandura (1997) suggests that by viewing one's self performing a particular task or skill successfully aids in strengthening his or her belief in their ability which paves way for additional self- belief and self-efficacy.

The following sections discuss the findings with regard to, 1) video modelling; 2) video self-modelling; 3) next dollar strategy; 4) limitations; and 5) future research.

## **Video Modelling Intervention**

The results from the present study demonstrate that VM was more effective with increasing each of the participant's skill acquisition of purchasing skills. Video modelling was only effective in teaching the Next Dollar Strategy with 3 of the participants. Only participant 1 was able to maintain the 12 steps of the task analysis including the successful application of the Next Dollar Strategy during follow-up and generalisation phases. An explanation for her success may be that participant 1 was the eldest of all 6 participants and she had more opportunity to practice her newly acquired skill as she was more independent and went shopping with her mother. She enjoyed shopping and was already familiar with using an EFTPOS card.

Scott, Foley, Bourke, Leonard, and Girdler (2014) state that it is important that individuals with developmental disabilities such as with Down syndrome are provided with opportunities to learn and practice new skills such as money handling. Most parents of children with Down syndrome tend to restrict their children due to safety concerns. This in turn hinders these individual's learning opportunities as well as restricts them in developing the necessary skills needed to participate in various activities in the community (Scott et al., 2014). When completing the social validity questionnaire, participant 1's mother did show a lack of expectation of her daughter's shopping and money skills as she believed that participant 1 may have already developed "bad habits" with her money handling skills. Given the opportunity of this study, participant 1 demonstrated confidence and skill in her purchasing and money skills. In comparison, participant 2 successfully applied the Next Dollar Strategy during post intervention 1 and 2, but was unable to demonstrate the Next Dollar Strategy during follow-up and generalisation. She mentioned to the researcher following these phases that she needed more practice with applying the Next Dollar Strategy

and this may have been a reason for her to forget the strategy when paying for her purchases. Participant 5 was also able to demonstrate the successful application of the Next Dollar Strategy following her VM intervention, however, she was unable to retain this newly acquired skill during the follow-up and generalisation phases. An explanation for this may be because, as 1 of the youngest of the participants being only 13 years old, she had a lack of opportunity to go shopping and practice applying the Next Dollar Strategy when making purchases.

Even though participant 3, participant 4 and participant 6 were unable to successfully apply the Next Dollar Strategy, an increase in their purchasing skill performance as per the 12 step task analysis was evident by the conclusion of the study. However, participant 6 did perform all 12 steps correctly during his generalisation phase. All participants showed great enthusiasm during each phase of the study and enthusiasm was evident to the researcher how each participant's level of confidence increased when making purchases using money from the beginning to the conclusion of the study.

Video Modelling has been an effective strategy in increase purchasing skills with young individuals with intellectual or developmental disabilities. In comparison however to the present study all the purchasing skills in these studies were taught in conjunction with other strategies such as video instructions, verbal prompts, verbal instructions, and verbal praise (Alcantara, 1994; Haring, Kennedy, Adams, & Pitts-Conway, 1987; Mechling, Pridgen, & Cronin, 2005). Since one of the aims of the present study was to investigate if the VM intervention was effective in teaching the Next Dollar Strategy, no other strategy was combined with the VM in this study.

### **Video Self-Modelling Intervention**

Even though an improvement in skill acquisition for purchasing skills occurred following the VSM intervention, none of the 6 participants mastered the Next Dollar Strategy following their VSM intervention phase. This finding is contrary to the majority of the video self-modelling literature as this intervention strategy has been used to successfully teach a variety of skills to different populations in several community settings (Dowrick, 1999). For example, VSM has been successful in increasing language and communication, social skills, behaviour and task instructions textual (Gelbar et al., 2012) and has been widely used in improving reading, comprehension and textual abilities of typically developing students as well as students with disability (Prater et al., 2012). There appears, however, to be a scarcity of research related to the teaching of numeracy or number skills with VSM as an intervention. The findings of this present study suggest that VSM may be a strategy to teach purchasing skills but not specific money skills such as the Next Dollar Strategy.

On close examination of the findings and of the social validity results, where all participants enjoyed the study and liked to see themselves, or a model on the video demonstrating the steps of purchasing and the Next Dollar Strategy, an explanation for the lack of success in using only VM and VSM strategies for teaching the Next Dollar Strategy could be that the cognitive concept and skills involved in learning the Next Dollar Strategy may have been too difficult for 5 of the 6 participants. This result may have been different if another person could have verbally and/or physically prompted the steps if/when necessary.

### **The Next Dollar Strategy**

In the present study, the functional skills which were part of the shopping process were considered as a whole quality of life skill/functional skill process and broken down to the 12 step task analysis. Teaching the Next Dollar Strategy was included as part of the 12

step process. The findings from the current study suggest that to teach the Next Dollar Strategy, placing the step of the Next Dollar Strategy within the functional skill of purchasing and paying for an item via VM or VSM may not be the best method. This is because the Next Dollar Strategy involved understanding the concept of rounding up the price to the next dollar amount or giving one more dollar for the cents. In order to understand this concept, especially for those with Down syndrome, there are a number of different cognitive skills to be considered and this was shown to be difficult for 5 of the participants in this study.

As mentioned by Harper et al. (2004) individuals with Down syndrome are often unable to respond quickly and they often find it challenging to adjust to situations that are new and unfamiliar. Thus, it has been suggested that one of the best methods to teach cognitive skills to those with Down syndrome is to break the process in to smaller steps and through repetition (Harper et al., 2004). While there was a 12 step process, repetitive viewing was possible via VM and VSM and visual prompts were also provided on all videos as well as listening to verbal prompts (except for participant 3 and participant 5), the concept of the money exchange and the individual steps of the Next Dollar Strategy appeared to have been too difficult for 5 of the 6 participants to master. In addition, environmental factors in the supermarket such as the level of noise and the number of customers present during the time each of the participants shopped may also have had an effect on the participant's lack of success with Next Dollar Strategy.

Nevertheless, there have been several studies that have had success in teaching the Next Dollar Strategy to individuals with intellectual or developmental disabilities. Out of the 10 studies reported in Table 1 which taught the Next Dollar Strategy, all of these employed more than one intervention strategy to teach purchasing skills as well as the Next Dollar Strategy. The additional intervention strategies included, modelling, role-playing, peer tutoring, direct verbal instructions, in-vivo training, a time delay procedure, slides, flash cards

and a least prompt procedure (Aeschleman & Schladenhauffen, 1984; Ayres & Langone, 2002; Cihak & Grim, 2008; Colyer & Collins, 1996; Denny & Test, 1995; McDonnell & Ferguson, 1988; McDonnell et al., 1984; Schloss & Kobza, 1997; Test et al., 1993; Westling et al., 1990) none of which were used in this study. The closest to the present study carried out by Ayres and Langone (2002) who used a computer based instructional package enhanced with video footage to teach 3 students with moderate intellectual disabilities the Next Dollar Strategy in a classroom setting. However, the results showed that the 3 participants were unable to generalise their newly acquired skills to the community setting. Thus, it appears a combination of video and teaching strategies are required so that young people with Down syndrome can learn shopping and money skills including the Next Dollar Strategy.

### **Limitations**

There were a number of limitations to the current study. Firstly, the teaching of the Next Dollar Strategy was viewed from a quality of life functional teaching context. That is, the twelve step task analysis was developed for a typical shopping process. The task analysis did not specifically focus on the teaching the Next Dollar Strategy and this may have affected the performance of 5 of the 6 participant's learning of and retaining the Next Dollar Strategy. Secondly, verbal prompts of each of the 12 steps were included as part of all the VM and VSM training videos. It was decided, however, that for participants 3 and 4, the voice over was not included because participant 3's speech was not clear and could cause the steps to be misinterpreted by participant 4. Unclear speech and focusing mainly on key words rather than long sentences is considered to be common amongst individuals with DS (Harper et al., 2004) but deletion of the voice over may or may not have interfered on the results by these 2 participants.



## **Implications for Teaching**

The main aim of the present study was to teach the Next Dollar Strategy during the shopping process so the purchasing and the Next Dollar Strategy was broken down to a 12 step task analysis. It was observed that 3 of the participants found the Next Dollar Strategy challenging and participant 3, participant 5 and participant 6 found purchasing specific goods a challenge. For example, during her generalisation phase participant 6 was trying to find gluten free products which took a lot longer as she was unfamiliar with the layout of the supermarket. Finding the “health food” section seemed a little difficult and overwhelming for her and it could be that she, because she has Down syndrome, tend to find new and unfamiliar situations challenging (Harper et al., 2004). For future teaching purposes, extra steps need to be placed into the task analysis so that participants purchasing items can seek help from shop assistants when looking for specific item/items when shopping.

Another scenario which 4 of the 6 participants encountered at different occasions at the supermarket was when the shop assistant asked if the participant’s had loyalty cards such as, a “club card”, “one card” or “fly bye cards”. In these situations, the researcher had to intervene as the participants were unsure of how to respond. Therefore, extending the purchasing steps could be advantageous for participants in future instances.

Given the results from the present study, teaching money skills such as the Next Dollar Strategy to those with intellectual disabilities, especially Down syndrome, may require the teaching phase broken down into a smaller step instructional process and use VM rather than VSM to teach this skill. By doing so, this may allow the learner to first understand the concept of the Next Dollar Strategy while VM will aid in teaching the concept visually and the individual will be able to repeatedly view the skills being modelled. Providing the opportunity to later use these money skills in the natural environment is just as important. This was confirmed when participant 2 stated that she needed more practice using the Next

Dollar Strategy following her failure to apply the Next Dollar Strategy successfully during her follow-up and generalisation phases.

### **Considerations for Future Research**

It appears from the existing research that there is a need for further research in teaching money skills such as the Next Dollar Strategy to individuals with intellectual or developmental delays. The Next Dollar Strategy is one of the most successful strategies to teach these skills. The main purpose of teaching the Next Dollar Strategy specifically to this population is that it avoids the issue of computing change (Browder & Grasso, 1999a). Even though the participants in the present study were able to distinguish between NZ currencies ranging from 10c to \$20 during the initial assessment, when out in the environmental setting 4 of the 6 participants did get anxious and overwhelmed when paying for their purchases. In addition, learning the Next Dollar Strategy involved a number of different cognitive skills which appeared difficult for the participants in this study to learn and understand.

Future researchers should consider introducing a direct teaching session of the Next Dollar Strategy first, such as in the Ayres and Langone (2002) study, in a classroom environment or in a setting the participant is comfortable in and then applying the strategy in a natural setting while a researcher or a research assistant can be present to provide prompting if required. It may also be helpful to have verbal cues embedded in the VM and VSM training videos as it will provide the participants a reminder as to what behaviour is to be carried out next. Creating a task analysis specifically for teaching the Next Dollar Strategy may also be helpful rather than embedding this within a purchasing good process.

## **Conclusion**

The present study appears to be the first to examine the effects of teaching the Next Dollar Strategy to adolescents and young adults with DS using VM and VSM and to find out if VM or VSM was more effective in teaching the Next Dollar Strategy. All 6 participants demonstrated increased skill acquisition in purchasing skills while the VM intervention strategy was more successful in teaching the Next Dollar Strategy than the VSM intervention, although only participant 1 was able to maintain 100% success at follow-up and generalisation. All 6 participants indicated that they enjoyed being a part of the study and looked forward to putting their newly acquired skills to practice in the future.

Video modelling and video self-modelling have been found to be effective interventions in teaching functional skills, behaviour, and language-communication skills to children with intellectual and developmental disabilities, however, VM was more successful in this study to teach purchasing and the Next dollar Strategy to this population. Thus, more research is required in the teaching of the Next Dollar Strategy to individuals with Down syndrome as acquiring money skills is a critical aspect for their quality of life and independence.

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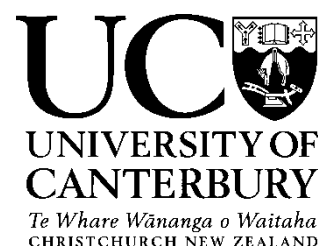
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## APPENDIX A

School of Health Sciences  
Jinali Maddumarachchi  
Telephone: +64 21 02560970  
Email: [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)  
18/09/2014



### **The effects of teaching money skills to adolescents and/or young adults with Down syndrome using video modelling and video self-modelling**

#### **INFORMATION SHEET FOR PARENTS/CAREGIVERS**

My name is Jinali Maddumarachchi, and I am a graduate student from the University of Canterbury. As part of my thesis study towards a Master of Science in Child and Family Psychology, I will be looking at the effects of teaching money skills using video modelling and video self-modelling to adolescents and/or young adults with Down syndrome in a real world setting.

Being part of this research project involves:

- With your son or daughter, attending one introductory interview, at a mutually agreed location and time to establish if the project is suitable for your son or daughter.
- A shopping game will be conducted in a simulated or real world setting as per the choice of your son/daughter which will provide the opportunity for them to demonstrate their purchasing skills in order to establish baseline. A twelve step task analysis has been created which will be used to record steps related to the purchasing process.
- Your son/daughter will also be taught some coping strategies in case of unexpected situations when using money. For example, not having enough money to pay for purchases.
- Your son/daughter will then be videoed performing tasks related to completing a purchasing process using the Next Dollar Strategy, in a real world setting such as a supermarket (with you in attendance).
- Your son/daughter will be required to view his or her video self-model as well as another young adult's (participant's) video model in order to master the necessary money skills. Similarly another participant will be given your son/daughter's video model to be viewed.
- You may be requested to help your son/daughter with turning the DVD on and off. You are also requested to not make any additional copies of the video, and ensure that the videoed material will not be uploaded onto the internet via social media as there will be other individuals involved in the video as well.
- Your son/daughter will then be taken to an environmental setting of their choice such as a supermarket to use their newly acquired money skills independently.
- Each time your son/daughter is taken to a real world setting such as the supermarket, you will be asked to provide a sum of money not more than \$30 for him/her to purchase some goods.

At the end of the project, a summary of the results will be provided to you.



Participation is voluntary and you have the right to withdraw at any stage without penalty. If your son/daughter does withdraw, I will remove information relating to your child unless in the late stages where it is deemed unfeasible.

The results of the project may be published and/or presented at a conference but please be assured your name or your child's name will not be disclosed. To ensure anonymity and confidentiality, a code name will be assigned to each participant. Data will be securely stored in a locked filing cabinet at the University of Canterbury. Only my two supervisors and I will have access to the data. The data will be destroyed after a period of 5 years. A thesis is a public document and will be available through the UC Library.

The project is being carried out as a requirement for a Master of Science in Child and Family Psychology under the supervision of Gaye Tyler-Merrick who can be contacted at [gaye.tyler-merrick@canterbury.ac.nz](mailto:gaye.tyler-merrick@canterbury.ac.nz) or on 03-345-8380 and Professor Karyn France at [karyn.france@canterbury.ac.nz](mailto:karyn.france@canterbury.ac.nz) or on 03-3642610. They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, and Private Bag 4800, Christchurch. Email - [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)

If you and your son/daughter agree to participate in the study, you are asked to complete the consent forms and return it to me.

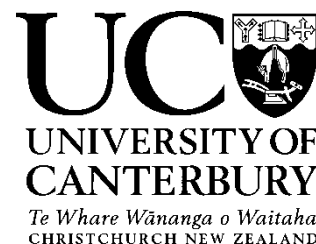
Thank you.

Yours Sincerely,

Jinali Maddumarachchi

## APPENDIX B

School of Health Sciences  
 Jinali Maddumarachchi  
 Telephone: +64 21 02560970  
 Email: [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)



**The effects of teaching money skills to adolescents and/or young adults with Down syndrome using video modelling and video self-modelling**

**CONSENT FORM FOR PARENTS/CAREGIVERS**

- ☐ I have been given a full explanation of this project and have had the opportunity to ask questions.
- ☐ I understand what is required of my son/daughter if they agree to take part in the research.
- ☐ I understand that participation is voluntary and my son/daughter may withdraw at any time without penalty. Withdrawal of participation will also include the withdrawal of any information which has been provided should this remain practically achievable.
- ☐ I understand that another participant will be viewing the video model of my son/daughter as well.
- ☐ I agree that no copies will be made of the video, given that there will be other individuals in the video and I will endeavor to ensure that the videoed material will not be uploaded onto the internet via social media.
- ☐ I understand that any information or opinions that have been provided by my son/daughter and I will be kept confidential to the researcher, and her supervisors, and that any published or reported results will not identify participants by their names. I understand that a thesis is a public document and will be available through the UC Library.
- ☐ I understand that all data collected for the study will be kept locked and secure at the Dovedale Campus, University of Canterbury and will be destroyed after a period of five years.
- ☐ I understand that there may be emotional risks associated with taking part in this research project and that my son/daughter will be taught the necessary coping strategies, in case of an unexpected situation such as not having enough money to pay for purchases.
- ☐ I understand that I will be provided with a report on the findings of the study at the conclusion of the project.
- ☐ I understand that I can contact Jinali Maddumarachchi or her supervisors Gaye Tyler-Merrick ([gaye.tyler-merrick@canterbury.ac.nz](mailto:gaye.tyler-merrick@canterbury.ac.nz) or 03-345-8380) or Professor Karyn France ([karyn.france@canterbury.ac.nz](mailto:karyn.france@canterbury.ac.nz) or 03-3642610) for further information. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz))

By ticking the above boxes and signing below, I agree to have fully understood the project and its objectives and procedure, and therefore agree for my son/daughter to partake in the study.

|                  |  |
|------------------|--|
| Name of Parent : |  |
| Phone Number:    |  |
| Email Address:   |  |
| Signature:       |  |
| Date:            |  |

## APPENDIX C

School of Health Sciences  
 Jinali Maddumarachchi  
 Telephone: +64 21 02560970  
 Email: [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)  
 18/09/2014



### **The effects of teaching money skills to adolescents and/or young adults with Down syndrome using video modelling and video self-modelling**

#### **INFORMATION SHEET FOR PARTICIPANTS**

My name is Jinali Maddumarachchi, and I am going to use video to teach students like yourself to count money and pay for things.

If you want to take part,

- You will meet with me along with your parents/caregiver and we will talk together about whether this project will be helpful to you.
- A shopping game will be carried out in a place that you like such as the supermarket.
- You will be videoed while you buy and pay for something at a place of your choice such as the supermarket/movie theatre.
- You will be asked to watch your video, or the video of another student who is learning this too. I will ask you to watch the video at least six times over two weeks. Another student might watch your video too.
- We will then go again to a place you would like, such as the supermarket, to practice what you have learned, this time without me helping.
- Your parents/caregiver will be asked to give you some money to practice with.
- At the end of the project, a summary of what I have found out will be given to you.

Participating in this project is voluntary and you are able to leave the project any time that you like. If you do leave, I will take out your information from this project, if I can.

I will write this up for my University work and to tell other teachers what I found out. When I write it up, I will not use your name. No-one, other than my two supervisors will know that it was you who was in my project.

All the information about you will be kept safely in my office at the University of Canterbury. My supervisors' names are Gaye Tyler-Merrick and Karyn France and they are happy to answer any questions you may have about participating in this project. Their contact numbers are at the bottom of this page.

This project has been approved by the University of Canterbury Human Ethics Committee, you can contact me or my supervisors if you have any questions about it. You can also contact the Chair of the Ethics Committee by email ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)) if you have a complaint.

If you would like to help me with my project please complete the consent form and return it to me.

Thank you.

Yours Sincerely,

Jinali Maddumarachchi

Jinali – Phone 021-02560970

Gaye Tyler-Merrick – Phone 345-8380

Karyn France – Phone 3642610



## APPENDIX D

School of Health Sciences  
 Jinali Maddumarachchi  
 Telephone: +64 21 02560970  
 Email: [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)



**The effects of teaching money skills to young adults with Down syndrome using video modelling and video self-modelling**

**CONSENT FORM FOR PARTICIPANTS**

- ☐ Jinali has told me about the project and has answered my questions about it.
- ☐ I understand that I will have a meeting with Jinali and my parents/caregivers.
- ☐ I will participate in this project only if I want to and I am able to leave the project at any time.
- ☐ Jinali will first carry out a shopping game at a place of my choice.
- ☐ I understand that I will be buying some things from a supermarket/store as a customer during my training.
- ☐ I agree to be videoed as part of the project and for another student to see my video.
- ☐ I understand that all details about me will be kept safe and my real name will not be used.
- ☐ I understand that Jinali will write this up in a public document which will be available through the university library.
- ☐ I will be given a summary of what Jinali found out at the end of the project.
- ☐ I understand that this project has been looked at and approved by the University of Canterbury Human Ethics Committee.
- ☐ I understand that I can contact Jinali ([jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz) or 021-02560970) or her supervisors Gaye Tyler-Merrick ([gaye.tyler-merrick@canterbury.ac.nz](mailto:gaye.tyler-merrick@canterbury.ac.nz) or 345-8380) or Professor Karyn France ([karyn.france@canterbury.ac.nz](mailto:karyn.france@canterbury.ac.nz) or 3642610) for any further information I would like. If I have any complaints, I can contact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch ([human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)).

By ticking the above boxes and signing below, I agree that I fully understand Jinali's project and what she is trying to find out, and I am happy to take part in it.

|                      |  |
|----------------------|--|
| Name of Participant: |  |
| Phone Number:        |  |
| Email Address:       |  |
| Signature:           |  |
| Date:                |  |

## APPENDIX E

School of Health Sciences  
Jinali Maddumarachchi  
Telephone: +64 21 02560970  
Email: [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)  
18/09/2014



### **The effects of teaching money skills to young adults with Down syndrome using video modelling and video self-modelling**

#### **INFORMATION SHEET FOR STORE MANAGER/OWNER**

My name is Jinali Maddumarachchi, and I am a graduate student from the University of Canterbury. As part of my thesis study towards a Master of Science in Child and Family Psychology, I will be looking at the effects of teaching money skills using video modelling and video self-modelling to young adults with Down syndrome in a real world setting.

I am seeking your permission to video tape in your shop along with a volunteer staff member while my participant(s) carry out a purchasing transaction with the assistance of a volunteer staff member.

Your staff member will be videotaped while he/she performs the 'normal' task of completing a purchasing transaction. This transaction will take place at a check-out in your store at a mutually agreed time. This video will then become the training video for the participants and will be given a personal copy which will then be their property.

Your staff member will not be named at any point in the video footage or the project write up and will be referred to as 'the shop assistant'. Nothing will change in your store, it will be business as usual.

You can withdraw from the project at any time. The results of this project may be published and/or presented at a conference. The training video that your staff member will feature in will only be seen by the participants, my two supervisors, and I.

If at any point you do have any questions or concerns, you are most welcome to contact me or my supervisors Gaye Tyler-Merrick at [gaye.tyler-merrick@canterbury.ac.nz](mailto:gaye.tyler-merrick@canterbury.ac.nz) or on 03-345-8380 and Professor Karyn France at [karyn.france@canterbury.ac.nz](mailto:karyn.france@canterbury.ac.nz) or on 03-3642610 at any time and if you're unhappy with the project you can contact the Chair of the Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch. Email: [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)

If you are happy for me to come and carry out my skills training session with up to six young adults with Down syndrome at your store, please sign the consent form and return it to me.

Thank you.

Yours sincerely,

Jinali Maddumarachchi

## APPENDIX F

School of Health Sciences  
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 Telephone: +64 21 02560970  
 Email: [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)



**The effects of teaching money skills to young adults with Down syndrome using video modelling and video self-modelling**

**CONSENT FORM FOR MANAGER/OWNER**

- ☐ I understand the purpose of the project, my role, and the role of the shop assistant in this project.
- ☐ I am happy to be a part of the project and volunteer my shop as the 'scene' for the purchase/money transaction.
- ☐ I understand that the store will be included in the training videos made for the participants in this project.
- ☐ I understand that a member of staff will feature in the video, and that their name will not be used at any point.
- ☐ I understand that only the participants, supervisors and the researcher involved in the project will see the video. I also understand that the video will become the property of the participants.
- ☐ I understand that the store's name will not be used in the project at any time.
- ☐ I understand that I can change my mind about my store being in this project at any time.
- ☐ I understand that the results of this project will be part of Jinali's Masters thesis and aspects of this thesis may be published in an article or presented at a conference at a future time. .
- ☐ I know that if I have any questions I can contact Jinali or her supervisors.
- ☐ I know how to contact the University of Canterbury Human Ethics Committee if I am unhappy about this project.

By ticking the above boxes and signing below, I agree to have fully understood the project and its objectives and procedure, and therefore agree to partake in the study.

|                |  |
|----------------|--|
| Name:          |  |
| Phone Number:  |  |
| Email Address: |  |
| Signature:     |  |
| Date:          |  |

## APPENDIX G

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 Jinali Maddumarachchi  
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 18/09/2014



**The effects of teaching money skills to young adults with Down syndrome using video modelling and video self-modelling**

**INFORMATION SHEET FOR SHOP ASSISTANT VOLUNTEERS**

My name is Jinali Maddumarachchi, and I am a graduate student from the University of Canterbury. As part of my thesis study towards a Master of Science in Child and Family Psychology, I will be looking at the effects of teaching money skills using video modelling and video self-modelling to adolescents and/or young adults with Down syndrome in a real world setting

I am seeking your permission to video tape you while you undertake a purchase/money transaction with the participants in my project.

You will be videotaped while you perform your normal working task of completing a cash transaction along with the participant. You will have the opportunity to view the videoed material and give your permission for the video footage to be used in the project. The video will then become the training video for the participants and they will be given a personal copy which will be their property.

You will not be named at any point in the training video or in the project write up and will be referred to as 'the shop assistant'. You can withdraw from the project at any time. The results of this project may be published and/or presented at a conference. The training video you feature in will only be seen by the participants, my two supervisors and myself and will be destroyed at the end of the project, but the participants will be responsible for what happens to his/her copy of the training video.

If at any point you do have any questions or concerns, you are most welcome to contact me or my supervisors Gaye Tyler-Merrick at [gaye.tyler-merrick@canterbury.ac.nz](mailto:gaye.tyler-merrick@canterbury.ac.nz) or on 03-345-8380 and Professor Karyn France at [karyn.france@canterbury.ac.nz](mailto:karyn.france@canterbury.ac.nz) or on 03-3642610 at any time and if have any complaints you can contact the Chair of the Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch. Email: [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)

If you are happy to be a part of this project please sign the consent form on the next page and return it to me.

Thank you.

Yours sincerely,

Jinali Maddumarachchi

## APPENDIX H

School of Health Sciences  
 Jinali Maddumarachchi  
 Telephone: +64 21 02560970  
 Email: [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)



**The effects of teaching money skills to young adults with Down syndrome using video modelling and video self-modelling**

**CONSENT FORM FOR SHOP ASSISTANT VOLUNTEERS**

- ☐ I understand the project, and my role in it.
- ☐ I am happy to be a part of the project as a volunteer.
- ☐ I understand that I will be included in the training videos that the participants will view so they can learn purchasing skills.
- ☐ I understand that I will have the opportunity to view the videoed footage and give my consent for it to be used in the project.
- ☐ I understand that the participants, supervisors, and the researcher involved in the project will see the video. I also understand that the video will become the property of the participants.
- ☐ I understand that my real name will not be used in the project at any time.
- ☐ I understand that I can change my mind about being in this project at any given time.
- ☐ I understand that the results of this project may be published.
- ☐ I understand that the video will be destroyed after the research is completed, and that the participants will be responsible for what happens to their copy.
- ☐ I know that if I have any questions I can contact Jinali or her supervisors at any time.
- ☐ I know how to contact the University of Canterbury Human Ethics Committee if I wish to complain about this project.

By ticking the above boxes and signing below, I agree to have fully understood the project and its objectives and procedure, and therefore agree to partake in the present study.

|                |  |
|----------------|--|
| Name:          |  |
| Phone Number:  |  |
| Email Address: |  |
| Signature      |  |
| Date           |  |



## APPENDIX I

### Semi-Structured Screening Interview Schedule

*I just need to ask you a few questions which will help me teach your son/daughter how to pay for their purchases in a real world setting such as the supermarket or at the movies.*

**Name:**

**Relationship to participant:**

**Time:**

**Date:**

#### Parent/Caregiver Questions

**Q1.** Does your child have a way of contacting you in case of an emergency? If so, what is this? (In case I would have to contact you in case of an emergency)

Contact number: \_\_\_\_\_

**Q2.** Have you previously talked about or taught your child any money skills?

Yes

No

Comment-

---

**Q3.** Tell me about the purchasing skills of your son/daughter? Do they shop on their own or with you?

Comment-

---

**Q4.** Can you tell me about the money skills your son/daughter already has?

Is he/she able to count at least up to 30? Yes/No

Is he/she able to recognize numbers from 0-30? Yes/No

Is he/she able to recognize NZ currency between 10c and \$20? Yes/No

Does he/she know the value of coins and notes up to \$30? Yes/No

Comment-

---

**Q5.** Can you tell me about how important the need for learning money skills is for your son/daughter?

Comment-

---

**Q6.** Do you believe that by learning money skills, it will aid in other aspects of your son/daughter's life?

Comment-

---

**Q7.** What do you hope your son/daughter will gain from being a part of this study?

Comment-

---

**Q8.** Is there anything I should be aware of, especially regarding health and safety with regards to your son/daughter?

Comment-

---

**Q9.** Is there anything else you would like to tell me?

Comment-

---

**Participant Questions (triangulated with parent/caregiver responses)**

*I just need to ask you a few questions to help me teach you how to buy things at a store.*

**Name:**

**Age:**

**Gender (for my records only):**

**Able to speak and understand conversational English (my records only):** Yes                      No

**Comments –**

---

**Able to participate in a conversation (my records only):** Yes                      No

**Comments –**

---

**Q1.** Can you tell me why you would like to learn money skills?

Comment-

---

**Q2.** Do you buy anything on your own when you go to the store?

Comment-

---

**Q3.** Can you tell me what kind of things you would like to buy from the supermarket or when at the movies?

Comment -

---

**Q4.** What kinds of things do your parents/caregivers buy for you?

Comment –

---

**Q5.** Tell me how you feel when you go to the store to buy something (ascertaining the level of confidence of the participant)?

Comment –

---

*Now shall we look at some money you use to buy things with?*

**Q6.** Can you show me one dollar (\$1)? (Carry on showing the participant coins and notes from 10c to \$20 and note down if the participant identifies each different coin/note correctly or incorrectly).

Comment- 10c      20c      50c      \$1

\$2      \$5      \$10      \$20

---

*Now let's look at this money.*

**Q7.** Can you show me which amount is bigger – is it this or that? (Show the participant the different currency ranging from 10c to \$20 and ask the participant if he/she knows which is higher in value and which is lower).

*Just do the best you can.*

Comment-

---

*Now let's do some counting.*

**Q8.** Starting at 1 can you count as high as you can until I ask you to stop (at 30)?

*Just do the best you can.*

Comment-

---

**Q9.** Now, let's see if you can recognize these numbers? (Show the participant a range of numbers between 0 and 30 on a number line and note if the participant is able to identify numbers randomly).

*Just do the best you can.*

Comment –

---

***Thank you so much for doing such a great job. This work we did today will help me help you when we learn a way of working with money.***

## APPENDIX J

### Social Validity Questionnaire – Parents/Caregiver

Please answer these five questions honestly as it will assist in establishing the social validity of the present study. Your answers will remain anonymous and will be only viewed by my supervisors and me.

Date:

Time:

**Q1. How important do you think learning money skills is for young adults with Down syndrome?**

☐  
Very Important

☐  
Moderately Important

☐  
Not Important

**Q2. Do you feel you daughter/son gained enough knowledge to improve their money skills by taking part in this study?**

☐  
Yes

☐  
Maybe

☐  
No

**Q3. How satisfied are you with the skills taught in the present study?**

☐  
Very Satisfied

☐  
Moderately Satisfied

☐  
Not Satisfied

**Q4. Have you noticed any change in your child's confidence with money and shopping as a result of participating the study?**

☐  
**Yes**

☐  
**Maybe**

☐  
**No**

**Q5. Would you recommend the video modelling or video self-modelling method as an effective way to teach young people with Down syndrome money skills?**

☐  
**Yes**

☐  
**Maybe**

☐  
**No**

**Thank you for taking the time to answer this questionnaire!**

**APPENDIX K****Social Validity Questionnaire – Participant**

Please answer these five questions honestly. Your answers will remain anonymous and will only be seen by my supervisors and myself.

Date:

Time:

**Q1. How important do you think using money correctly is for you?**

☐  
Very Important

☐  
Moderately Important

☐  
Not Important

**Q2. Do you think this study has helped you to improve your money skills?**

☐  
Yes

☐  
Maybe

☐  
No

**Q3. Which video did you like watching the most? The video with you in it or the video with your partner in it?**

☐  
Video with me

☐  
Video with my partner

☐  
Not sure

**Q4. Did you enjoy being a part of this study?**

☐  
Yes

☐  
Not sure

☐  
No

**Q5. Would you recommend your friends to be a part of a study like this to learn how to buy things?**

☐  
Yes

☐  
Maybe

☐  
No

**Thank you for taking the time to answer these questions!**



## APPENDIX L



## HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen  
Email: [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)

Ref: HEC 2014/67

6 August 2014

Jinali Maddumarachchi  
School of Health Sciences  
UNIVERSITY OF CANTERBURY

Dear Jinali

The Human Ethics Committee advises that your research proposal "The effects of teaching money skills to adolescents and/or young adults with Down Syndrome using video modelling and video self modelling" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 1 August 2014.

Best wishes for your project.

Yours sincerely

A handwritten signature in black ink, appearing to read 'L. MacDonald'.

Lindsey MacDonald  
**Chair**  
*University of Canterbury Human Ethics Committee*

## APPENDIX M

**UPP Club members (and parents)**

**Here is an opportunity for you to learn money skills.**

My name is Jinali Maddumarachchi and I am a graduate student from the University of Canterbury. As part of my thesis study, I will be looking at teaching money skills using the “Next Dollar Strategy” through video modelling and video self-modelling.

**To take part in my study you need to be able to:**

Count at least up to number 30, recognize numbers from 1-30 and money from 10c to \$20, and know the value of coins and notes up to \$30 (place value).

If you are willing to be a part of the above study and would like further information please contact me via the contact details below.



**Contact details:**

**Email – [jam336@uclive.ac.nz](mailto:jam336@uclive.ac.nz)**

**Contact number – 02102560970**

**Thank you!**

## APPENDIX N

### Video Viewing Chart

Place a tick in the box each time you watch your video (VSM)

(Minimum of 6 viewings each)

|                       |                       |                        |                        |                        |                        |                        |
|-----------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <b>Day 1</b><br>Date: | <b>Day 2</b><br>Date: | <b>Day 3</b><br>Date:  | <b>Day 4</b><br>Date:  | <b>Day 5</b><br>Date:  | <b>Day 6</b><br>Date:  | <b>Day 7</b><br>Date:  |
|                       |                       |                        |                        |                        |                        |                        |
| <b>Day 8</b><br>Date: | <b>Day 9</b><br>Date: | <b>Day 10</b><br>Date: | <b>Day 11</b><br>Date: | <b>Day 12</b><br>Date: | <b>Day 13</b><br>Date: | <b>Day 14</b><br>Date: |
|                       |                       |                        |                        |                        |                        |                        |

Place a tick in the box each time you watch your partner's video (VM)

(Minimum of 6 viewings each)

|                       |                       |                        |                        |                        |                        |                        |
|-----------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <b>Day 1</b><br>Date: | <b>Day 2</b><br>Date: | <b>Day 3</b><br>Date:  | <b>Day 4</b><br>Date:  | <b>Day 5</b><br>Date:  | <b>Day 6</b><br>Date:  | <b>Day 7</b><br>Date:  |
|                       |                       |                        |                        |                        |                        |                        |
| <b>Day 8</b><br>Date: | <b>Day 9</b><br>Date: | <b>Day 10</b><br>Date: | <b>Day 11</b><br>Date: | <b>Day 12</b><br>Date: | <b>Day 13</b><br>Date: | <b>Day 14</b><br>Date: |
|                       |                       |                        |                        |                        |                        |                        |

## APPENDIX O

### **Task Analysis**

| <b>Task</b>   | <b>Correct</b> | <b>Incorrect</b> | <b>No response</b> |
|---|----------------|------------------|--------------------|
| Participant enters supermarket  |                |                  |                    |
| Selects item or items   |                |                  |                    |
| Goes to the appropriate checkout  |                |                  |                    |
| Gives item/items to the cashier   |                |                  |                    |
| Exchanges appropriate social greetings  |                |                  |                    |
| Waits for the total amount to be shown/provided   |                |                  |                    |
| Counts exact amount with an extra dollar for the cents (using the Next Dollar Strategy) |                |                  |                    |
| Hands over money to the cashier   |                |                  |                    |
| Waits for change (if there is any)  |                |                  |                    |
| Puts the change securely back inside purse/wallet                                       |                |                  |                    |
| Collects item/items and says "Thank you"  |                |                  |                    |
| Leaves supermarket with purchased item/items  |                |                  |                    |